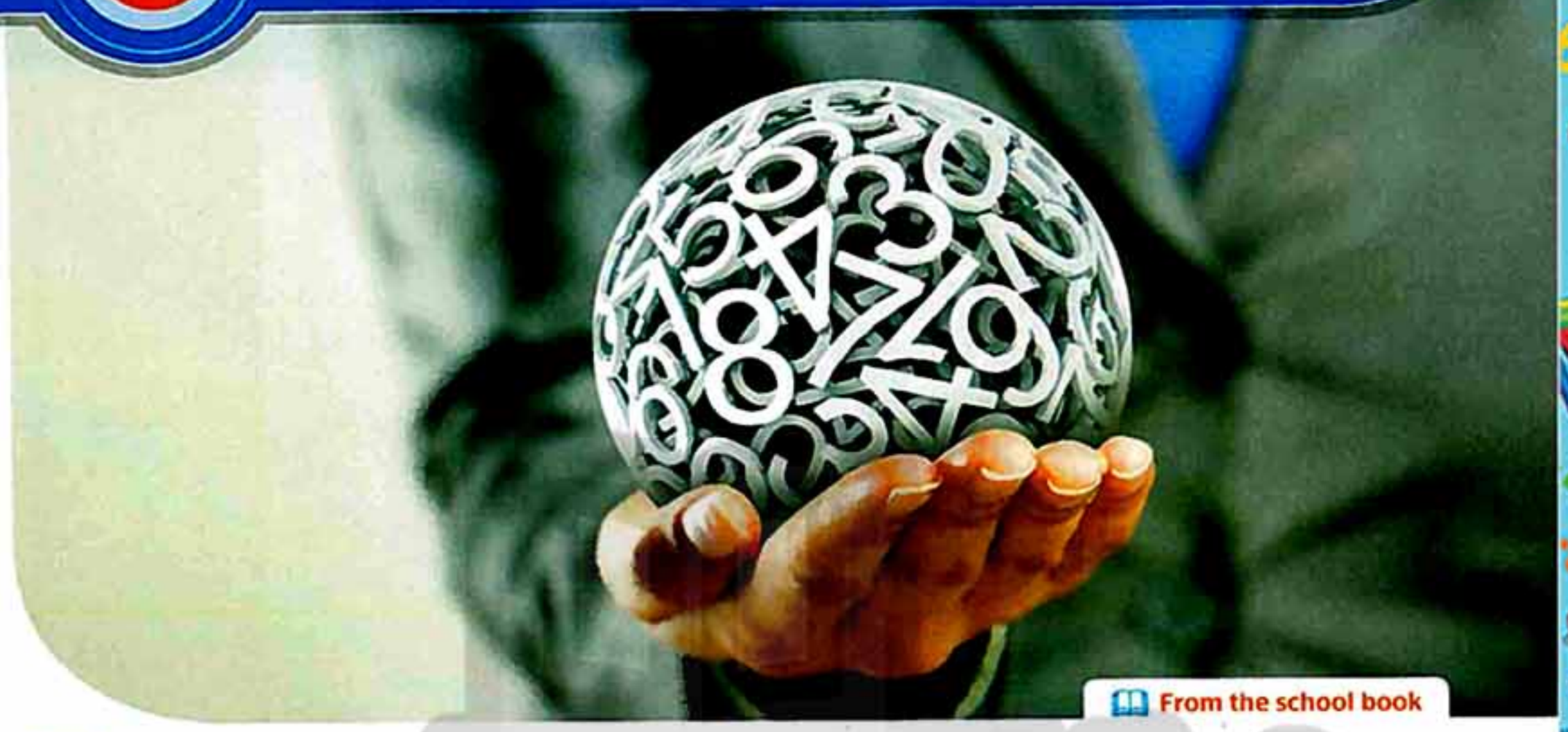
EXERCISE 1

# Set of Rational Numbers



From the school book

**1** **Which of the following numbers is rational and which is not rational ?**

$\frac{2}{3}$ , zero , 6.5 , $-1.8$ , $12\frac{5}{6}$ , $\frac{2-2}{3}$ , $\frac{4}{5-5}$ , $3^2$ , $(-4)^{zero}$

**2** **Which of the following numbers is an integer ?**

$\frac{15}{5}$ , $\frac{4}{8}$ , $-\frac{35}{7}$ , $-\frac{14}{14}$ , $-\frac{24}{5}$ , $\frac{0}{5}$ , $3\frac{1}{4}$

**3** **Complete each of the following :**

1 $\frac{3}{4} = \frac{9}{.....} = \frac{.....}{8}$ 2 $\frac{4}{5} = \frac{.....}{10} = \frac{16}{.....}$

**4** **Put each of the following numbers in the simplest form :**

1 $\frac{15}{25}$ 2 $-\frac{24}{56}$ 3 $\frac{45}{20}$ 4 $-\frac{132}{88}$

**5** **Which of the following rational numbers can be written as a terminating decimal ?**

1 $\frac{7}{15}$ | 2 $\frac{7}{20}$ | 3 $\frac{5}{8}$ | 4 $-\frac{8}{9}$ | 5 $\frac{5}{11}$

6 $-\frac{13}{22}$ | 7 $\frac{17}{6}$ | 8 $2\frac{2}{5}$ | 9 $-1\frac{2}{3}$ | 10 $|-1\frac{2}{9}|$

**6** **Write each rational number in the form $\frac{a}{b}$ :**

1 $-5$ | 2 zero | 3 0.75 | 4 $-0.01$

5 5.4 | 6 30% | 7 4.5% | 8 $8\frac{2}{3}$

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**7** **Write the following rational numbers as a decimal and a percentage :**

1 📖 $\frac{1}{6}$ | 2 📖 $2\frac{1}{2}$ | 3 📖 $-\frac{3}{20}$

4 $\frac{5}{9}$ | 5 📖 $7\frac{3}{16}$ | 6 $\frac{16}{3}$

**8** 📖 Why does the definition of a rational number $\frac{a}{b}$ state that $b \neq 0$ ?

**9** **If $a = 2$ , $b = 6$ ,**

**show which of the following numbers is rational and which is not rational :**

1 $\frac{b}{a}$ 2 $-\frac{2}{a}$ 3 $\frac{\text{zero}}{a+b}$ 4 $\frac{2b}{a-2}$

**10** **Complete the following :**

1 If $\frac{5}{a}$ is a rational number , then $a \neq$ .....

2 The number $\frac{3}{x-2}$ is a rational number if $x \neq$ .....

3 The number $\frac{2}{3x}$ is a rational number if $x \neq$ .....

4 The rational number $\frac{4-x}{x-3} = 0$ if $x =$ .....

5 The rational number $\frac{x-5}{x} = 0$ if $x =$ .....

6 $\frac{1}{4}$ = ..... % 7 $\frac{21}{1000}$ = ..... % 8 $|-0.4|$ = ..... %

**11** **Choose the correct answer from the given ones :**

1 If $-\frac{4}{5} = \frac{20}{x}$ , then $x =$ .....

(a) 25 (b) – 25 (c) 5 (d) 100

2 The number $\frac{a-6}{a-4}$ is not a rational number if a = .....

(a) 6 (b) 4 (c) 1 (d) zero

3 The rational number $\frac{a}{b}$ is an integer if .....

(a) $a < b$ (b) $a > b$

(c) b is a divisor of a (d) a is a divisor of b

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4 $0.\dot{5}\dot{7}$ = .....

(a) $\frac{57}{100}$ (b) $\frac{75}{99}$ (c) $\frac{575}{1000}$ (d) $\frac{19}{33}$

5 $\left|-\frac{8}{25}\right|$ = .....

(a) $-\frac{8}{25}$ (b) $-0.3\dot{2}$ (c) $0.3\dot{2}$ (d) 32%

6 12% = .....

(a) $0.\dot{3}$ (b) 1.2 (c) $\frac{3}{25}$ (d) 0.012

7 The rational number $\frac{x}{-3}$ is negative if $x$ .....

(a) > zero (b) < zero (c) ≥ zero (d) = zero

8 If $\frac{a}{b}$ is a rational number and ab = zero, then .....

(a) $a = 0 , b \neq 0$ (b) $a \neq 0 , b \neq 0$ (c) $a = 0 , b = 0$ (d) $a \neq 0, b = 0$

9 The number $\frac{5x}{|x|-2} \notin \mathbb{Q}$ if $x$ = .....

(a) zero (b) – 1 (c) ± 2 (d) 5

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12 Write the rational number $\frac{a}{b}$ that equals $\frac{3}{5}$ and the sum of its two terms is 24

13 **If $x \in \mathbb{N}$, find the values of $x$ which make each of the following an integer :**

1 $\frac{75}{x}$

2 $\frac{15}{x+1}$

EXERCISE 2

# Comparing and Ordering Rational Numbers

From the school book

**1 Complete by rational numbers on the number line :**

1 From the school book

-2 ☐ $-\frac{4}{3}$ -1 ☐ $-\frac{1}{3}$ zero ☐ $\frac{2}{3}$ 1 ☐ $\frac{5}{3}$ 2

2

-1 $-\frac{5}{6}$ ☐ ☐ ☐ $-\frac{1}{6}$ zero ☐ ☐ $\frac{3}{6}$ ☐ ☐ 1

**2 Represent each of the following rational numbers on the number line :**

1 From the school book $\frac{1}{3}$ | 2 $-\frac{1}{2}$ | 3 $\frac{5}{3}$ | 4 $-\frac{7}{4}$

5 From the school book $1\frac{1}{5}$ | 6 From the school book $-3\frac{1}{2}$ | 7 0.4 | 8 $|-\frac{3}{5}|$

**3 From the school book Write the correct sign "< , = or > " :**

1 $-\frac{1}{2}$ ☐ zero | 2 $-\frac{3}{4}$ ☐ $\frac{1}{4}$ | 3 $-4\frac{1}{2}$ ☐ $-5$

4 $4\frac{1}{2}$ ☐ 5 | 5 $|-\frac{3}{2}|$ ☐ $\frac{1}{2}$ | 6 $|\frac{15}{2}|$ ☐ $7\frac{1}{2}$

**4 Put the suitable sign " > , < or = " in the space in each of the following :**

1 $\frac{1}{4}$ ..... $\frac{1}{6}$ | 2 $-\frac{5}{7}$ ..... $-\frac{3}{2}$ | 3 $\frac{9}{5}$ ..... $1\frac{2}{3}$

4 $-3\frac{1}{2}$ ..... $-\frac{20}{6}$ | 5 0.5 ..... $\frac{2}{8}$ | 6 1.6 ..... $|-\frac{8}{5}|$

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**5** **Arrange the following rational numbers descendingly :**

$\frac{3}{10}$ , $\frac{7}{30}$ , $-\frac{1}{3}$ , $-\frac{1}{5}$ and $\frac{4}{15}$

**6** **Arrange the following rational numbers in an ascending order :**

$\frac{3}{4}$ , $-\frac{5}{8}$ , $-\frac{7}{12}$ and $\frac{2}{3}$

**7** **Write a rational number in each of the following :**

1 $\frac{2}{5} < \square < \frac{3}{5}$ 2 $-\frac{2}{3} < \square < -\frac{1}{3}$ 3 $\frac{1}{8} < \square < \frac{1}{4}$ 4 $-\frac{2}{7} < \square < -\frac{3}{14}$

**8** **Write two rational numbers lying between :**

1 $\frac{1}{2}$ and $\frac{4}{5}$ 2 $-\frac{3}{4}$ and $-\frac{2}{3}$ 3 0.3 and $\frac{3}{5}$

**9** **Write four rational numbers between each of the following pairs of numbers :**

1 $\frac{1}{2}$ and $\frac{11}{12}$ 2 $-\frac{4}{9}$ and $-\frac{5}{6}$ 3 zero and 3

**10** **Complete by rational numbers on the number line :**


**11** Identify and write four rational numbers between $\frac{3}{2}$ and $\frac{3}{4}$ , such that one of them is an integer.

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**12** Find the integer lying between $\frac{11}{3}$ , $\frac{11}{2}$ , and between $\frac{9}{4}$ , $\frac{25}{6}$ at the same time. « 4 »

**13** **In the opposite number line :**

If OA = OB , find the value of $x$




« – 10 »

EXERCISE 3

# Adding and Subtracting Rational Numbers

From the school book

**1 Complete the following :**

1 The additive identity element in $\mathbb{Q}$ is .....

2 The additive inverse of the number $\frac{3}{7}$ is .....

3 The additive inverse of the number $-\frac{4}{9}$ is .....

4 $\frac{-6}{-11}$ is the additive inverse of the number .....

5 The additive inverse of the number $(\frac{2}{3})^{zero}$ is .....

6 The additive inverse of the number $(-\frac{2}{7})^{zero}$ is .....

7 The additive inverse of the number $|-\frac{4}{5}|$ is .....

8 The additive inverse of the number zero is .....

**2 Find the result of each of the following in the simplest form :**

1 $\frac{3}{7}+\frac{2}{7}$

2 $-\frac{2}{9}+\frac{2}{9}$

3 $\frac{7}{8}-\frac{3}{8}$

4 $-\frac{3}{5}-\frac{9}{5}$

5 $\frac{5}{6}+(-\frac{4}{6})$

6 $\frac{5}{9}+|-\frac{4}{9}|$

**3 Calculate the value of each of the following in its simplest form :**

1 $\frac{1}{4}+\frac{25}{8}$

2 $\frac{1}{5}-\frac{2}{3}$

3 $-\frac{9}{12}+\frac{3}{16}$

4 $-\frac{3}{10}+(-\frac{2}{5})$

5 $-\frac{15}{18}+\frac{12}{16}$

6 $-\frac{2}{5}-\frac{3}{15}$

7 $\frac{3}{7}-(-\frac{2}{5})$

8 $-\frac{5}{6}-(-\frac{3}{4})$

9 $\frac{19}{10}+(-\frac{39}{100})$

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**4 Find the value of each of the following in its simplest form :**

1 $3\frac{2}{7} + 2\frac{3}{7}$

2 $9\frac{1}{5} - 7\frac{3}{5}$

3 📖 $-10\frac{7}{8} - \left(-4\frac{5}{8}\right)$

4 📖 $\frac{1}{4} + 2\frac{3}{8}$

5 📖 $6\frac{2}{3} - 3\frac{1}{6}$

6 📖 $-15\frac{1}{2} + 2\frac{3}{8}$

7 📖 $-2\frac{1}{2} - 12\frac{1}{16}$

8 $2\frac{3}{8} - \frac{1}{4}$

9 📖 $-2 + 13\frac{3}{7}$

**5 Calculate each of the following in its simplest form :**

1 $\frac{2}{5} + 0.2$

2 $\left|-5\frac{1}{2}\right| - \frac{1}{4}$

3 $50\% + \frac{1}{4}$

4 $25\% + \left(-\frac{1}{4}\right)$

5 $\frac{2}{3} - 0.\dot{3}$

**6 Choose the correct answer from the given ones :**

1 $\frac{3}{4} + 50\ \% =$ .....

(a) 75 % (b) 150 % (c) $\frac{5}{4}$ (d) $\frac{3}{2}$

2 Subtracting $\frac{1}{5}$ from $\frac{6}{5}$ gives .....

(a) 1 (b) – 1 (c) $-\frac{3}{5}$ (d) $\frac{7}{5}$

3 Subtracting $\frac{1}{3}$ from $-\frac{4}{3}$ gives .....

(a) – 1 (b) 1 (c) $-\frac{5}{3}$ (d) $\frac{5}{3}$

4 Subtracting $\frac{1}{7}$ from zero gives .....

(a) zero (b) $\frac{1}{7}$ (c) $-\frac{1}{7}$ (d) $\frac{6}{7}$

5 Subtracting $-\frac{3}{2}$ from zero gives .....

(a) zero (b) $\frac{3}{2}$ (c) $-\frac{3}{2}$ (d) 1

6 ..... $- \frac{1}{2} = -1$

(a) $1\frac{1}{2}$ (b) $\frac{1}{2}$ (c) $-\frac{1}{2}$ (d) $-1\frac{1}{2}$

7 $\frac{3}{5} +$ ..... = zero

(a) $\frac{3}{5}$ (b) $-\frac{3}{5}$ (c) 1 (d) zero

8 If A + $\frac{6}{7}$ = zero , then A = .....

(a) zero (b) 1 (c) $\frac{6}{7}$ (d) $-\frac{6}{7}$

9 If $\left(A + \frac{1}{4}\right)$ is the additive inverse of the number $\frac{3}{4}$ , then A = .....

(a) $-\frac{3}{4}$ (b) $-\frac{1}{4}$ (c) – 1 (d) 1

10 $-[12 + (-9)]$ = .....

(a) 3 (b) – 3 (c) 21 (d) – 21

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11 $-[(-3)+(-7)]=$ .....

(a) 4 (b) $-4$ (c) 10 (d) $-10$

12 If $x=2$ , $y=3$ and $z=4$ , then $\frac{x}{y}-\frac{z}{x}=$ .....

(a) $\frac{4}{3}$ (b) $-\frac{4}{3}$ (c) $\frac{3}{4}$ (d) $\frac{2}{3}$

13 If $\frac{5}{7}+\frac{x}{2}=\frac{25}{35}$ , then $2x=$ .....

(a) 2 (b) $\frac{5}{7}$ (c) zero (d) $\frac{11}{2}$

**7 Use the number line to find the result of each of the following :**

1 $\frac{1}{5}+\frac{2}{5}$ 2 $\frac{5}{8}-\frac{3}{8}$ 3 $-\frac{1}{3}+\frac{5}{3}$ 4 $-\frac{3}{4}+\left(-\frac{1}{4}\right)$

**8 Put (✓) for the correct statement and (×) for the incorrect one :**

1 $\frac{9}{16}-\left(-\frac{3}{4}\right)=\frac{9}{16}+\left(-\frac{3}{4}\right)$ ( )

2 $-3\frac{1}{6}-\left(-7\frac{1}{12}\right)=-3\frac{1}{6}+7\frac{1}{12}$ ( )

3 $0-\left(-\frac{13}{5}\right)=\frac{13}{5}$ ( )

4 $-\frac{3}{4}-\frac{2}{5}=-\frac{3}{4}+\frac{2}{5}$ ( )

**9 Write the property of addition used in each of the following :**

1 $\frac{7}{2}+\frac{9}{16}=\frac{9}{16}+\frac{7}{2}$

2 $\left[\frac{2}{3}+\left(-\frac{1}{3}\right)\right]+\left(-\frac{1}{6}\right)=\frac{2}{3}+\left[\left(-\frac{1}{3}\right)+\left(-\frac{1}{6}\right)\right]$

3 $\frac{3}{4}+\left(-\frac{3}{4}\right)=$ zero

4 zero $+\left(-\frac{3}{4}\right)=-\frac{3}{4}$

**10 Find the sum of each of the following :**

1 $\frac{4}{7}+$ zero

2 zero $+\left(-\frac{7}{10}\right)$

3 zero $-\left(-\frac{17}{4}\right)$

4 $\left[\frac{1}{4}+\left(-\frac{1}{4}\right)\right]+\frac{3}{4}$

5 $\frac{5}{6}+\left(-\frac{3}{6}+\frac{3}{6}\right)$

6 $\left[\frac{2}{9}+\left(-\frac{4}{9}\right)\right]+\left(-\frac{3}{9}\right)$

**11 Using the addition properties in ℚ , find the result of each of the following in the simplest form :**

1 $\frac{1}{4}+\frac{1}{2}+\frac{3}{4}$

2 $\frac{2}{7}+\frac{3}{4}+\frac{5}{7}+\frac{1}{4}$

3 $\frac{5}{4}+\left(-\frac{13}{5}\right)+\left(-\frac{25}{4}\right)+\frac{28}{5}$

4 $\frac{5}{8}+\left(-\frac{3}{4}\right)+\frac{3}{8}+\frac{3}{4}$

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5 $\frac{2}{13} + \frac{1}{5} + \frac{11}{13} + (-\frac{6}{5})$

6 $-\frac{3}{7} + \frac{1}{2} + (-\frac{1}{14})$

7 $\frac{12}{18} + \frac{5}{9} + \frac{1}{3} + (-\frac{15}{27})$

8 $\frac{2}{3} + \frac{4}{5} + \frac{3}{4}$

9 $7\frac{1}{4} + (-11\frac{1}{4})$

10 $-13\frac{1}{8} + 7\frac{3}{8}$

**12** If $x = \frac{5}{6}$ , $y = -\frac{1}{3}$ and $z = \frac{1}{2}$ , find the value of each of the following :

1 $x + z$ « $\frac{4}{3}$ »

2 $x + y$ « $\frac{1}{2}$ »

3 $x - y$ « $\frac{7}{6}$ »

4 $(y + z) - x$ « $-\frac{2}{3}$ »

**13** If $a = \frac{1}{2}$ , $b = -\frac{3}{2}$ , find the value of $(a - b)^3$ « 8 »

**14** **Complete the following :**

1 $14\frac{1}{2} + (-11\frac{1}{2}) = \ldots\ldots + [11\frac{1}{2} + (-11\frac{1}{2})]$

2 $\frac{3}{32} + (-\frac{17}{32}) = [\frac{3}{32} + (-\frac{3}{32})] + \ldots\ldots$

**15** **Complete in the same pattern :**

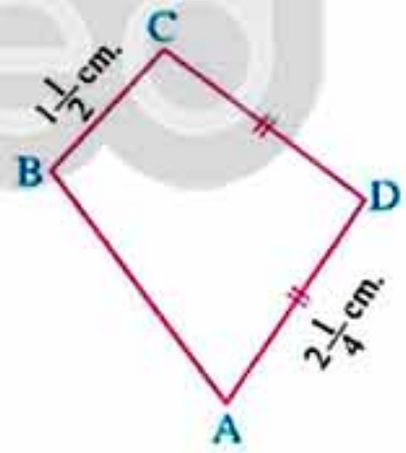
1 $\frac{1}{2}$ , $\frac{3}{4}$ , $\frac{7}{8}$ , $\frac{15}{16}$ , ..... , .....

2 6 , $5\frac{1}{4}$ , $4\frac{1}{2}$ , ..... , ..... , ..... , ..... , $\frac{3}{4}$

## Geometric Application

**16** If the perimeter of the opposite figure equals $8\frac{2}{3}$ cm. , calculate the length of $\overline{AB}$

« $2\frac{2}{3}$ cm. »




## For excellent pupils

**17** **In each of the following , find the value of $x$ :**

1 $|x + \frac{1}{5}| = \frac{2}{5}$ « $\frac{1}{5}$ or $-\frac{3}{5}$ »

2 $|\frac{3}{4} - x| = \frac{1}{4}$ « $\frac{1}{2}$ or 1 »

**18** **Find the result of the following :**

$(51\frac{1}{2} - 1\frac{1}{2}) + (52\frac{1}{2} - 2\frac{1}{2}) + \cdots + (99\frac{1}{2} - 49\frac{1}{2}) + (100\frac{1}{2} - 50\frac{1}{2})$ « 2500 »

EXERCISE 4

# Multiplying and Dividing Rational Numbers

From the school book

## 1 Complete the following :

1 The multiplicative identity of the rational numbers is .....
2 The multiplicative inverse of the number $\frac{3}{7}$ is .....
3 The multiplicative inverse of the number $-\frac{4}{9}$ is .....
4 The multiplicative inverse of the number $-6$ is .....
5 The multiplicative inverse of the number $3\frac{1}{2}$ is .....
6 The multiplicative inverse of the number 0.5 is .....
7 The multiplicative inverse of the number 1 is .....
8 The multiplicative inverse of the number $-1$ is .....
9 The multiplicative inverse of the number $\left(-\frac{3}{5}\right)^{zero}$ is .....
10 The multiplicative inverse of the number $\left|-\frac{3}{5}\right|$ is .....
11 The rational number $\frac{a-1}{5}$ has a multiplicative inverse if $a \neq$ .....
12 The rational number which has no multiplicative inverse is .....

## 2 Complete the following :

1 $\frac{2}{3} \times \left(-\frac{4}{5}\right) = -\frac{4}{5} \times$ .....
2 $7 \times \frac{.....}{7} = 1$
3 $\frac{2}{3} \times \frac{3}{2} =$ .....
4 $-\frac{4}{5} \times$ ..... $= -\frac{4}{5}$
5 $-\frac{4}{11} \times$ ..... $= 1$
6 $2\frac{3}{5} \times$ ..... $= 1$

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7 ..... × 0.8 = 1

8 4 × ..... = – 5

9 $\frac{2}{3}\left(2+\frac{1}{2}\right)=\frac{2}{3}\times 2+$ .....

10 $\frac{3}{9}=\frac{2}{3}\times\frac{\ldots\ldots}{8}$

11 If $\frac{x}{y}=\frac{2}{3}$ , then $\frac{3x}{2y}=$ .....

12 If $\frac{a}{b}=70$ , then $\frac{a}{2b}=$ .....

**3 Put (✓) for the correct statement and (×) for the incorrect one :**

1 Every rational number has a multiplicative inverse. ( )

2 The multiplicative inverse of a rational number is an integer. ( )

3 The multiplicative inverse of the number $\frac{0}{7}$ is $\frac{7}{0}$ ( )

4 $2\frac{1}{5}$ is the multiplicative inverse for the rational number $5\frac{1}{4}$ ( )

5 $\left(\frac{2}{7}+\frac{3}{5}\right)$ is the multiplicative inverse for the rational number $\frac{35}{31}$ ( )

6 $\frac{3}{4}\left(\frac{1}{2}-\frac{1}{3}\right)=\frac{1}{8}$ ( )

**4 State the property of the multiplication of rational numbers used in each of the following statements :**

1 $-\frac{1}{2}\times\frac{2}{3}=\frac{2}{3}\times\left(-\frac{1}{2}\right)$

2 $-\frac{3}{7}\times\left(-\frac{7}{3}\right)=1$

3 $-\frac{7}{20}\times\left(\frac{5}{2}\times 4\right)=\left(\frac{5}{2}\times 4\right)\times-\frac{7}{20}$

4 $\frac{5}{4}\times 1=\frac{5}{4}$

5 $0.8\times 0=0$

**5 Find the result of each of the following in the simplest form :**

1 $\frac{3}{5}\times\frac{2}{7}$

2 $-\frac{1}{2}\times\frac{2}{3}$

3 $-\frac{3}{8}\times\left(-\frac{5}{3}\right)$

4 $\frac{2}{6}\times-\frac{3}{4}$

5 $-\frac{2}{3}\times\frac{5}{8}$

6 $\frac{4}{5}\times\left(-\frac{3}{7}\right)$

7 $\left|-\frac{3}{7}\right|\times\left(-\frac{4}{3}\right)$

8 $\frac{1}{2}\times|-12|$

9 $\frac{2}{3}\times\frac{3}{4}\times\frac{4}{5}\times\frac{5}{6}$

**6 Find the result of each of the following in the simplest form :**

1 $\frac{4}{5}\div\frac{3}{7}$

2 $-\frac{1}{6}\div\frac{5}{2}$

3 $-\frac{4}{11}\div\left(-\frac{4}{11}\right)$

4 $\frac{5}{27}\div\frac{1}{9}$

5 $\frac{5}{6}\div\left(-\frac{15}{2}\right)$

6 $-\frac{5}{16}\div\left(-\frac{11}{8}\right)$

7 $-\frac{5}{8}\div\frac{5}{8}$

8 zero $\div\frac{3}{5}$

9 $\frac{3}{4}\div(-9)$

Exercise 4

**7** **Find the result of each of the following in the simplest form :**

1 $3\frac{1}{2} \times (-4)$

2 $1\frac{1}{2} \times \left(-\frac{3}{2}\right)$

3 $-4\frac{2}{7} \times \left(-5\frac{1}{6}\right)$

4 $3\frac{1}{8} \times \left(-4\frac{1}{5}\right)$

5 $-0.5 \times \frac{2}{5}$

6 $2\frac{1}{2} \times 0.8$

7 $\left|-1\frac{1}{2}\right| \times \left|-\frac{5}{3}\right|$

8 $\left|-0.\dot{6}\right| \times 1\frac{1}{3}$

**8** **Find the result of each of the following in the simplest form :**

1 $-2\frac{1}{5} \div \frac{11}{5}$

2 $-7\frac{5}{6} \div \frac{47}{100}$

3 $-4\frac{2}{7} \div 1\frac{1}{14}$

4 $-1 \div 2\frac{1}{4}$

5 $-4\frac{1}{3} \div \left(-3\frac{1}{4}\right)$

6 $0.5 \div 5\frac{1}{2}$

7 $-2\frac{3}{4} \div \left(-3\frac{1}{8}\right)$

8 $6\frac{1}{4} \div (-15)$

9 $2\frac{3}{5} \div \left(-1\frac{11}{15}\right)$

**9** **Using the distribution property, find the value of each of the following in the simplest form :**

1 $\frac{5}{12} \times 3 + \frac{5}{12} \times 9$

2 $\frac{4}{9} \times 11 + \frac{4}{9} \times 16$

3 $4 \times \frac{8}{17} + 9 \times \frac{8}{17} + 4 \times \frac{8}{17}$

4 $\frac{6}{37} \times 7 + \frac{6}{37} \times 5 + \frac{6}{37} \times (-11)$

5 $\frac{4}{5} \times 13 - \frac{4}{5} \times 22 + \frac{4}{5} \times 9$

6 $\frac{7}{12} \times 5 + 9 \times \frac{7}{12} - 2 \times \frac{7}{12}$

7 $\frac{7}{13} \times 6 + \frac{7}{13} \times 8 - \frac{7}{13}$

8 $\frac{27}{11} \times \frac{9}{4} - \frac{27}{11} \times \frac{1}{4} + \frac{27}{11} \times 9$

9 $-\frac{3}{7} \times 8 + 5 \times \left(-\frac{3}{7}\right) + \left(-\frac{3}{7}\right)$

10 $\frac{5}{2} \times \frac{13}{11} + \frac{5}{2} \times \left(-\frac{2}{11}\right) + \frac{5}{2}$

11 $\frac{22}{25} \times \frac{7}{11} + \frac{5}{11} \times \frac{22}{25} - \frac{22}{25}$

12 $35 \times \frac{3}{4} + 35 \times \frac{1}{2} - 35 \times \frac{1}{4}$

13 $\frac{7}{15} \times \frac{4}{25} + \frac{16}{25} \times \frac{2}{3} + \frac{7}{15} \times \frac{1}{5} + \frac{16}{25} \times \left(-\frac{1}{5}\right)$

**10** **Find the result of each of the following in the simplest form :**

1 $\left(\frac{3}{8} + \frac{5}{8}\right) \div \frac{5}{8}$

2 $\frac{3}{4} \times \left(\frac{1}{2} - \frac{1}{3}\right)$

3 $\left(-\frac{18}{5} \div \frac{9}{35}\right) \times \left(-\frac{3}{7}\right)$

4 $\left[-\frac{12}{25} \times \left(-\frac{5}{7}\right)\right] \div \left(-\frac{9}{14}\right)$

5 $\left(-1\frac{2}{3} \times 4\frac{2}{3}\right) \div 6\frac{1}{9}$

6 $\left(5\frac{1}{16} \div 6\frac{3}{4}\right) \times \left(-7\frac{5}{9}\right)$

7 $-\frac{5}{2} \div \left(\frac{3}{4} + \frac{1}{2} - \frac{1}{3}\right)$

8 $\left(2\frac{2}{5} \div \frac{3}{4}\right)\left(-\frac{4}{3} \div 2\right)$

UNIT 1

**11** **Find the value of (n) in each of the following :**

1 $-\frac{7}{3} \times \left(-\frac{3}{7}\right) = n$

2 $n \times \frac{17}{3} = 1$

3 $-\frac{7}{3} \times n = 0$

4 $\frac{5}{7} \times n = \frac{5}{7}$

5 $n \times \left[\frac{1}{2} + \left(-\frac{3}{5}\right)\right] = n \times \frac{1}{2} + 5 \times \left(-\frac{3}{5}\right)$

**12** If $a = 2$ , $b = \frac{1}{2}$ and $c = \frac{3}{2}$ , find in the simplest form the value of : $(a - b) \div c$ « 1 »

**13** **If $x = -\frac{1}{3}$ , $y = \frac{3}{4}$ and $z = -3$ , find the numerical value of each of the following :**

1 $x\,y\,z$

2 $x\,y + y\,z$ « $\frac{3}{4}$ , $-\frac{5}{2}$ »

**14** **If $a = 1\frac{3}{4}$ , $b = \frac{12}{7}$ and $c = \frac{2}{3}$ , then find the numerical value of each of the following :**

1 $a\,b\,c + 3$

2 $a\,b - c$ « 5 , $\frac{7}{3}$ »

**15** If $a = \frac{3}{4}$ and $b = -\frac{5}{2}$ , find in the simplest form the numerical value of : $\frac{a-b}{a+b}$ « $-\frac{13}{7}$ »

**16** If $a = \frac{1}{3}$ , $b = \frac{1}{2}$ and $c = -2$ , find in the simplest form the value of : $(b - a)(b - c)$ « $\frac{5}{12}$ »

**17** **If $x = \frac{3}{2}$ , $y = -\frac{1}{4}$ and $z = -2$ , find in the simplest form the numerical value of each of the following :**

1 $\frac{1}{x\,y\,z}$ « $\frac{4}{3}$ »

2 $x - (z \div y)$ « $-\frac{13}{2}$ »

3 $\frac{x}{y} - \frac{z}{y}$ « − 14 »

4 $(x + z) \div (y - z)$ « $-\frac{2}{7}$ »

5 $\frac{x+y}{z}$ « $-\frac{5}{8}$ »

## Life Applications

**18** The weights of things on the surface of the moon = $\frac{1}{6}$ their weights on the surface of the Earth.

If the weight of a man on the Earth = $76\frac{4}{5}$ kg. , find his weight on the moon.

« $12\frac{4}{5}$ kg. »

Exercise 4

19 If water flows through a pipe at a rate of $2\frac{1}{2}$ litres per minute , how long will it take to fill three containers 20 litres each ?

« 24 minutes »

20 How many pieces of wire the length of each is $3\frac{3}{4}$ metres can be cut from a wire of length 60 metres ?
Will any piece of wire be left over ?
If so , how long will it be ?

« 16 pieces »

## For excellent pupils

21 Find the rational number which if we subtract $\left(\frac{2}{5}-\frac{1}{7}\right)\div\left(\frac{4}{35}+\frac{1}{7}\right)$ from it , the result will be 2

« 3 »

22 **Find the product of :**

$\frac{1}{2}\times\frac{2}{3}\times\frac{3}{4}\times\frac{4}{5}\times\cdots\times\frac{99}{100}$

What is the product when the last rational number is $\frac{n-1}{n}$ ?

EXERCISE 1

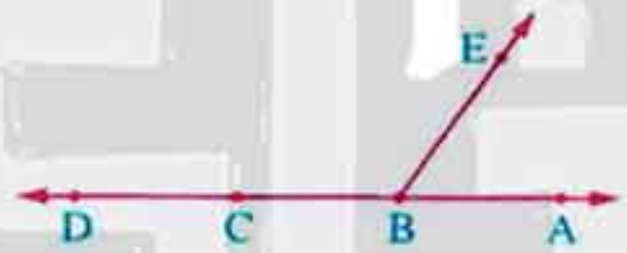
# Geometric Concepts – The Relations between the Angles


From the school book

**1** **In the opposite figure :**

A , B , C and D are points lying on one line ,

$\overleftrightarrow{AD} \cap \overleftrightarrow{BE} = \{B\}$




**Complete each of the following by using**

$\in , \notin , \subset$ **or** $\not\subset$ **:**

1. A ..... $\overline{DC}$
2. D ..... $\overline{AC}$
3. C ..... $\overleftrightarrow{AB}$
4. A ..... $\angle EBC$
5. $\overline{DC}$ ..... $\overrightarrow{AB}$
6. $\overline{BC}$ ..... $\overrightarrow{BA}$
7. $\overrightarrow{BA}$ ..... $\overleftrightarrow{DC}$
8. $\overline{AC}$ ..... $\overline{AD}$

**2** **Mention the type of the angle whose measure is as the following :**

1. $57°$
2. $117°$
3. $90°$
4. $200°$
5. $180°$
6. $43\frac{1}{2}°$
7. $89° 60\hat{}$
8. $179° 62\hat{}$

**3** **Write the measure of the angle which complements each of the angles whose measures are as follows :**

1. $30°$
2. $60°$
3. 📖 $48°$
4. 📖 $22\frac{1}{2}°$
5. $53\frac{1}{4}°$
6. $90°$
7. $25° 60\hat{}$
8. $0°$

**4** **Write the measure of the angle which supplements each of the angles whose measures are as follows :**

1. $20°$
2. $90°$
3. $152°$
4. 📖 $10°$
5. 📖 $92\frac{1}{2}°$
6. $0°$
7. $180°$
8. $141° 60\hat{}$

UNIT 4

**5 Complete the following table :**

| | | | | | | |
|---|---|---|---|---|---|---|
| **m (∠ ABC)** | 50° | ..... | 105° | ..... | 179° | ..... |
| **m (reflex ∠ ABC)** | ..... | 330° | ..... | 237° | ..... | 350° |

**6 Complete the following :**

1 The angle is .....

2 The measure of the straight angle = ..... ° and the measure of zero angle = ..... °

3 The measure of the right angle = ..... °

4 The acute angle is the angle whose measure is less than ..... and more than .....

5 The two complementary angles are the two angles whose sum of measures is .....

6 The two supplementary angles are the two angles whose sum of measures is .....

7 The two adjacent angles formed by a straight line and a ray with a starting point on this straight line are .....

8 If the two outer sides of two adjacent angles are perpendicular , then these two adjacent angles are .....

9 If the two outer sides of two adjacent angles are on the same straight line, then these two adjacent angles are .....

10 If the two adjacent angles are supplementary , then their outer sides are .....

11 The measure of the angle which is equivalent to two right angles equals ..... and it is called ..... angle.

12 The angle whose measure is 50° complements an angle of measure ..... and supplements an angle of measure .....

13 The angle whose measure is ..... complements the angle whose measure is 30° and supplements the angle whose measure is .....

14 The angle whose measure is ..... complements the angle whose measure is ..... and supplements the angle whose measure is 150°

15 The acute angle complements ..... angle and supplements ..... angle.

16 Zero angle is complemented by ..... angle and is supplemented by ..... angle.

17 The right angle is complemented by ..... angle and is supplemented by ..... angle.

18 The obtuse angle supplements ..... angle.

Exercise 1

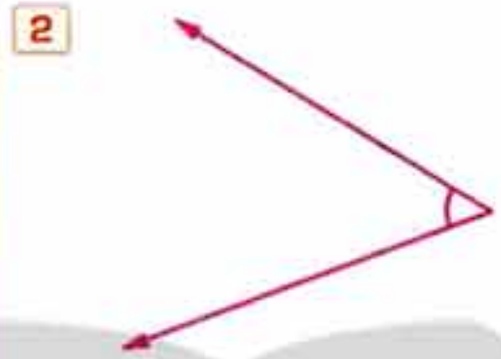
**7** **Draw the angles whose measures are as follows showing the type of each of them :**

1 115° 2 80° 3 195° 4 245° 5 180°

**8** **For each of the following angles , write the closest measure from the following 80° , 120° , 240°**

1

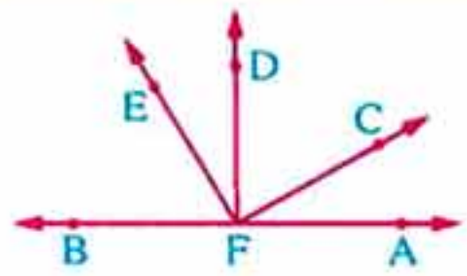
2



3

**9** **In the opposite figure :**

$F \in \overleftrightarrow{AB}$ , $\overrightarrow{FD} \perp \overleftrightarrow{AB}$ and m (∠ CFE) = 90°




**Complete the following :**

1 $\overrightarrow{FA} \cup \overrightarrow{FC}$ = .....

2 $\overrightarrow{FC} \cup \overrightarrow{FB}$ = .....

3 ∠ AFC supplements ∠ .....

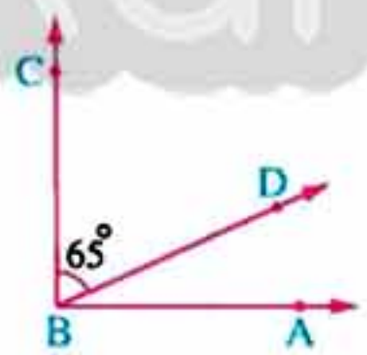
4 ∠ DFC complements each of ∠ ..... and ∠ .....

5 ∠ AFB is ..... angle , and ∠ DFB is ..... angle.

6 m (∠ DFE) = m (∠ .....) because each one of them complements ∠ .....

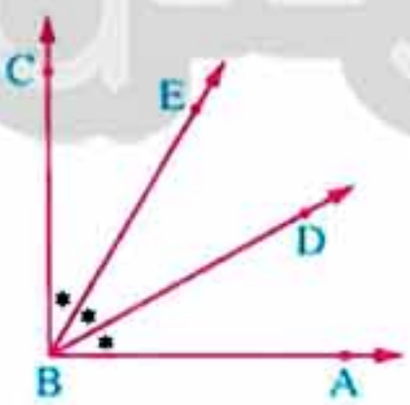
**10** **In each of the following figures, if $\overrightarrow{BA} \perp \overrightarrow{BC}$ , find the measure of the required angle under each figure :**

1



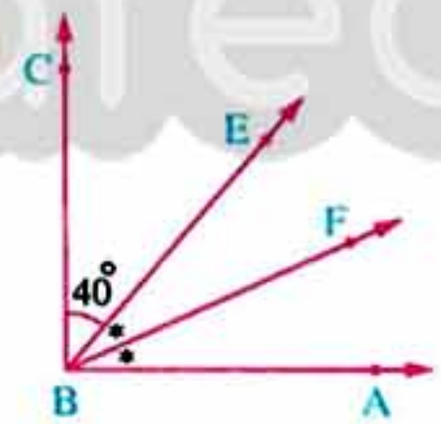

m (∠ ABD) = .....°

2




m (∠ DBC) = .....°

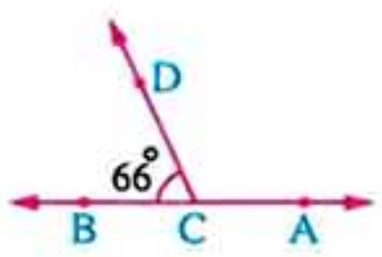
3




m (∠ ABF) = .....°

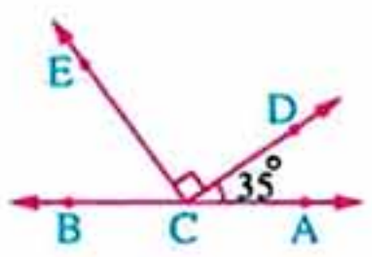
**11** **In each of the following figures, if $C \in \overleftrightarrow{AB}$ , find the measure of the required angle under each figure :**

1



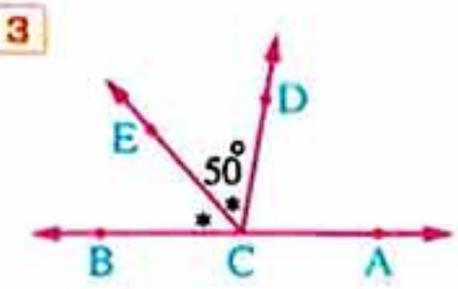

m (∠ ACD) = .....°

2




m (∠ ECB) = .....°

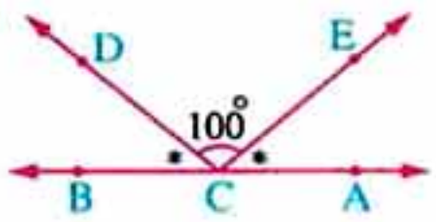
3




m (∠ ACD) = .....°

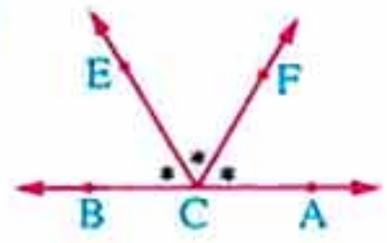
UNIT 4

4



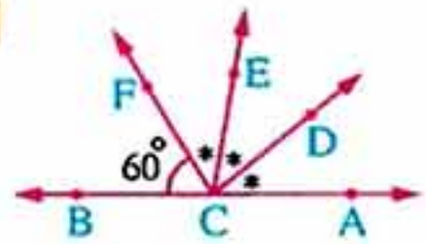

m (∠ DCB) = .....°

5




m (∠ FCB) = .....°

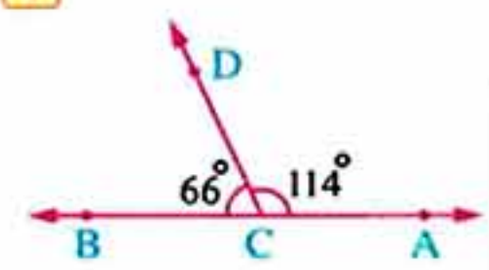
6



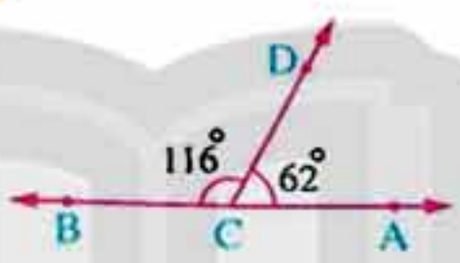

m (∠ DCB) = .....°

**12** **In each of the following figures , state if $\overrightarrow{CA}$ and $\overrightarrow{CB}$ are on the same straight line or not , and why :**

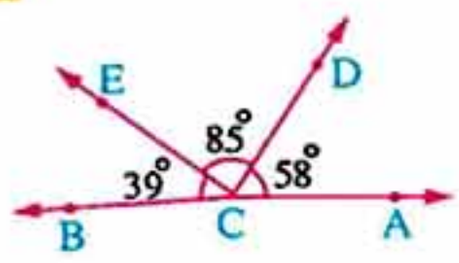
1



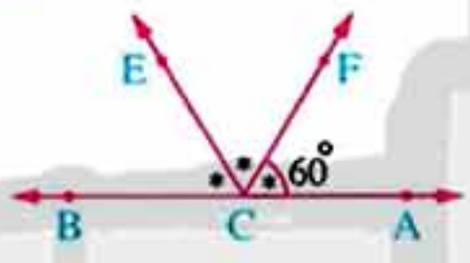

2



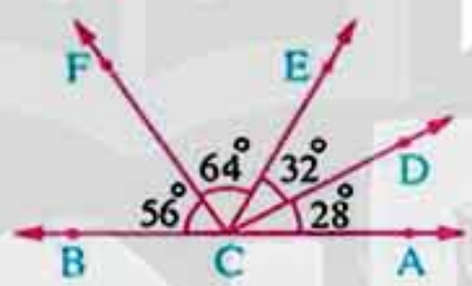

3



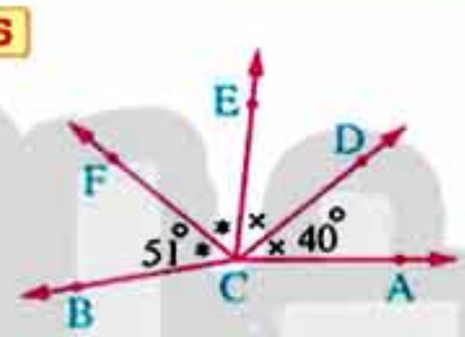

4




5




6




**13** **Choose the correct answer from the given ones :**

1 Between any two distinct points we can draw ..... straight line passing through them.

(a) zero (b) 1 (c) 2 (d) 3

2 If m (∠ A) + m (∠ B) = 180° , then ∠ A and ∠ B are two ..... angles.

(a) equal in measure (b) complementary

(c) supplementary (d) adjacent

3 If $\overrightarrow{BA} \perp \overrightarrow{BC}$ , then m (∠ ABC) = .....

(a) 40° (b) 90° (c) 180° (d) 360°

4 If ∠ A supplements ∠ B , ∠ A supplements ∠ C, then ∠ B and ∠ C are .....

(a) equal in measure. (b) complementary.

(c) supplementary. (d) adjacent.

5 If m (∠ X) = 15° , then the two angles whose measures are 2 m (∠ X) , 4 m (∠ X) are .....

(a) complementary. (b) supplementary.

(c) equal in measure. (d) obtuse angles.

6 If m (∠ A) = 2 m (∠ B) , ∠ A supplements ∠ B , then m (∠ B) = .....

(a) 30° (b) 60° (c) 120° (d) 90°

Exercise 1

7 $\overline{AB}$ ..... $\overrightarrow{AB}$

(a) $\in$ (b) $\notin$ (c) $\subset$ (d) $\not\subset$

8 If m ($\angle$ X) = 2 m ($\angle$ Y) and $\angle$ Y is an obtuse angle, then $\angle$ X is .....

(a) acute. (b) right. (c) obtuse. (d) reflex.

## 14 Complete the following :

1 If $\angle$ X complements $\angle$ Y , $\angle$ Z complements $\angle$ Y , then $\angle$ Z and $\angle$ X are .....

2 If $\angle$ X complements $\angle$ Y , m ($\angle$ X) = m ($\angle$ Y) , then m ($\angle$ X) = .....°

3 If $\angle$ A and $\angle$ B are two supplementary angles and m ($\angle$ A) = m ($\angle$ B) , then m ($\angle$ A) = ..... °

4 If m ($\angle$ X) = $\frac{1}{2}$ m ($\angle$ Y) , m ($\angle$ X) = 30° , then the two angles X and Y are .....

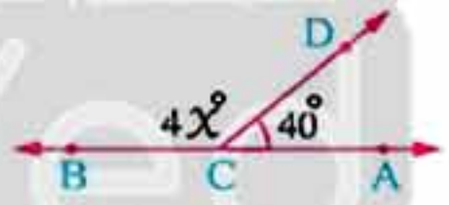
5 If the ratio between the measures of two supplementary angles is 2 : 7 , then the measure of the greater angle equals ..... °

6 If m ($\angle$ A) = $\frac{1}{2}$ m ($\angle$ B) , m ($\angle$ C) = $\frac{1}{2}$ m ($\angle$ D) , $\angle$ B supplements $\angle$ D , then m ($\angle$ A) + m ($\angle$ C) = ..... °

7 If $\angle$ A complements $\angle$ B and $\angle$ B supplements $\angle$ C , m ($\angle$ A) = 32° , then m ($\angle$ C) = ..... °

8 **In the opposite figure :**

If C $\in \overleftrightarrow{AB}$ , then $x$ = .....

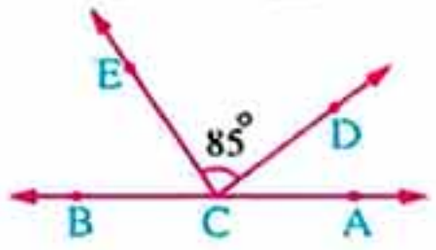



9 **In the opposite figure :**

If C $\in \overleftrightarrow{AB}$ , m ($\angle$ DCE) = 85° ,

m ($\angle$ ACD) : m ($\angle$ ECB) = 2 : 3

, then m ($\angle$ ACE) = .....° , m ($\angle$ DCB) = .....°



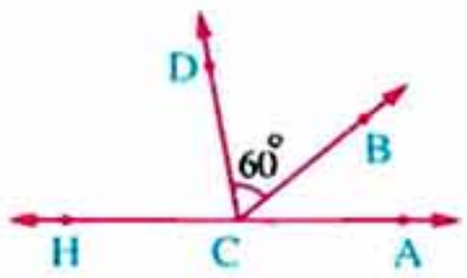

For excellent pupils

## 15 In the opposite figure :

m ($\angle$ DCB) = 60°

and m ($\angle$ ACB) : m ($\angle$ BCD) : m ($\angle$ DCH) = 2 : 3 : 4

Are $\overrightarrow{CA}$ and $\overrightarrow{CH}$ on the same straight line or not ? Why ?



EXERCISE 2

# The Relations between the Angles (Follow)

From the school book

**1** In each of the following figures , find the measure of the required angle under each figure :

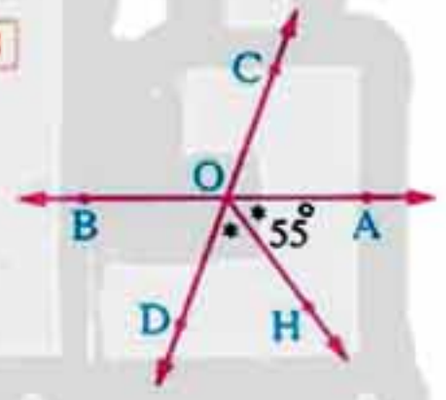
1


m (∠ AMH) = .....°

2

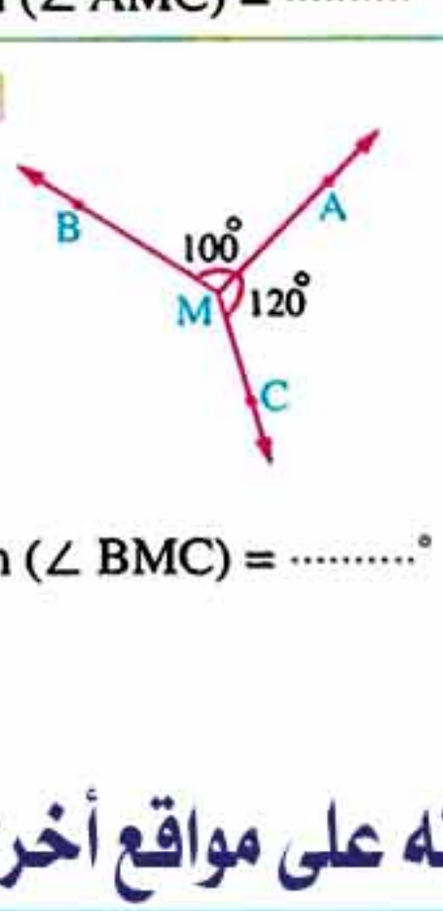

m (∠ HMD) = .....°

3



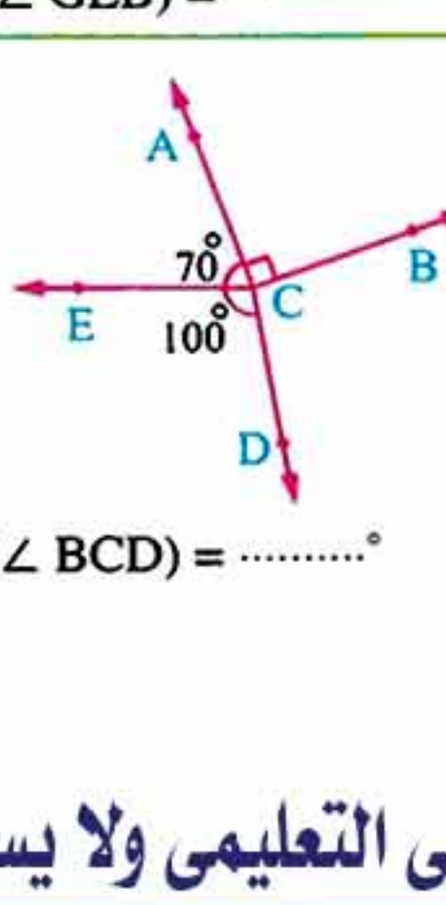

m (∠ COB) = .....°

4



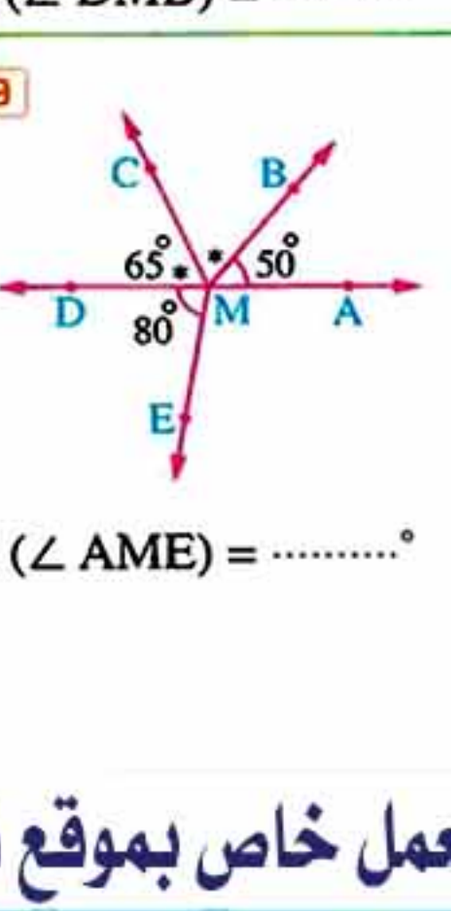

m (∠ AMC) = .....°

5




m (∠ GEB) = .....°

6




m (∠ DMB) = .....°

7




m (∠ BMC) = .....°

8




m (∠ BCD) = .....°

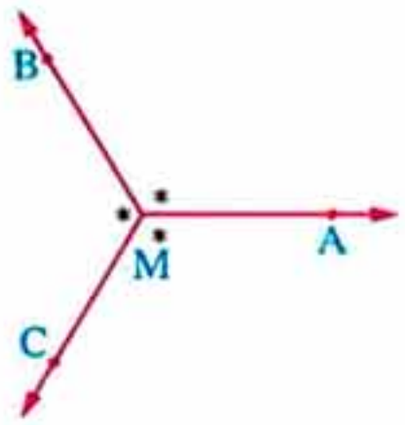
9




m (∠ AME) = .....°

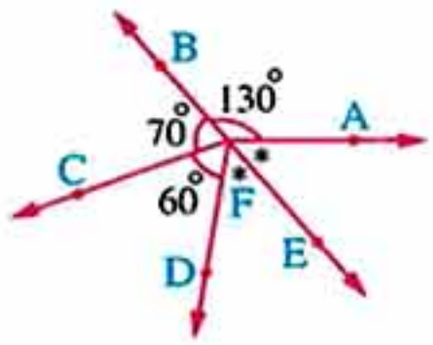
## Exercise 2

10



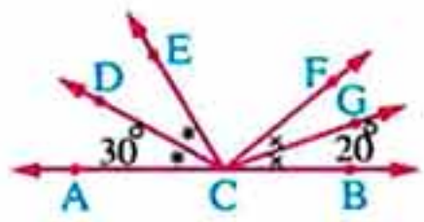

m (∠ AMC) = .....°

11



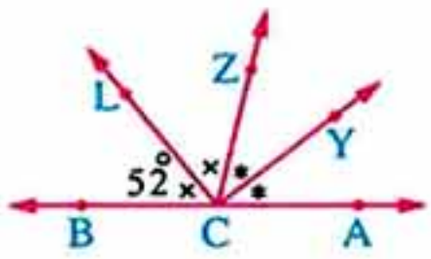

m (∠ EFD) = .....°

12



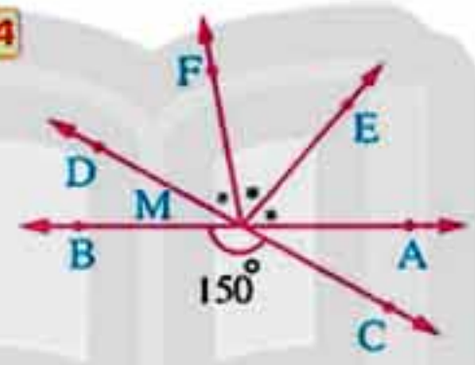

m (∠ FCE) = .....°

13



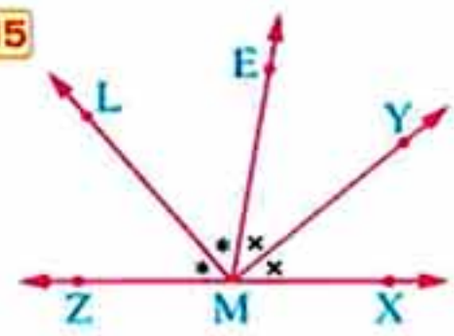

m (∠ YCA) = .....°

14




m (∠ CMF) = .....°

15




m (∠ YML) = .....°

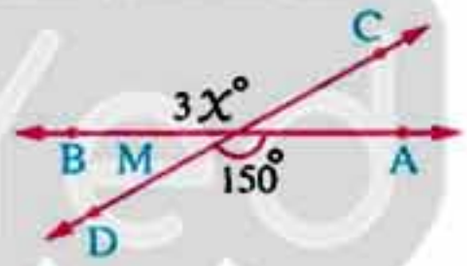
## 2 Complete the following :

1 If two straight lines intersect , then each two vertically opposite angles are .....

2 The sum of the measures of the accumulative angles at a point equals .....°

3 **In the opposite figure :**

If $\overleftrightarrow{AB} \cap \overleftrightarrow{CD} = \{M\}$ , then $x$ = .....°

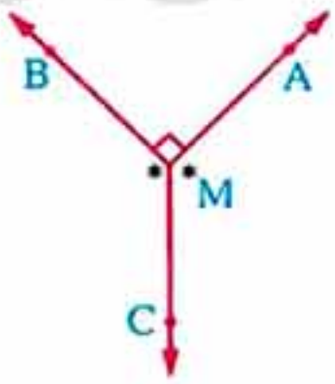



4 **In the opposite figure :**

If $\overrightarrow{MB} \perp \overrightarrow{MA}$

and $\overrightarrow{MC}$ bisects the reflexed angle AMB

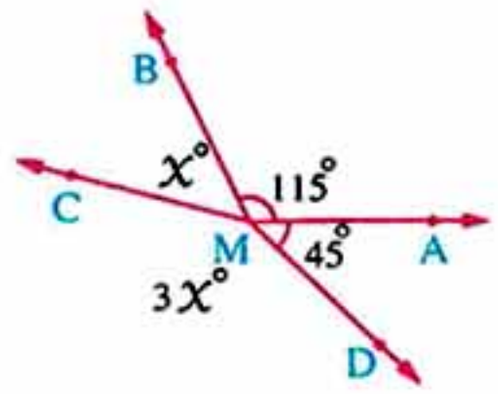
, then m (∠ AMC) = .....°




5 If $\overrightarrow{BD}$ bisects ∠ ABC and m (∠ ABD) = 35° , then m (∠ ABC) = .....°

6 **In the opposite figure :**

$x$ = .....°



UNIT 4

**3 Choose the correct answer from the given ones :**

1 The sum of measures of the accumulative angles at a point equals the sum of measures of ..... angles.

(a) 2 right (b) 3 right (c) 4 right (d) 5 right

2 The sum of measures of 4 accumulative angles at a point ..... the sum of measures of 5 accumulative angles at a point.

(a) = (b) < (c) > (d) ≠

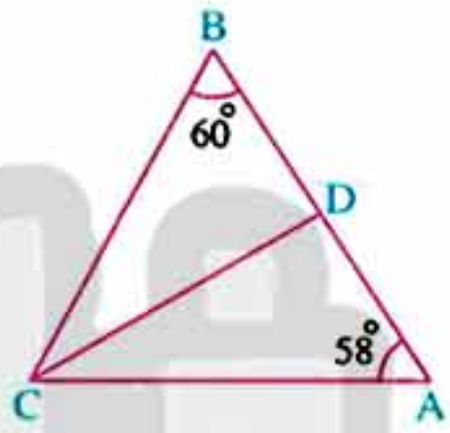
3 The two bisectors of two adjacent supplementary angles .....

(a) are perpendicular. (b) are parallel.

(c) are coincident. (d) included an acute angle between them.

**4 In the opposite figure :**

If ABC is a triangle in which $\overrightarrow{CD}$ bisects ∠ ACB , m (∠ A) = 58° , m (∠ B) = 60°

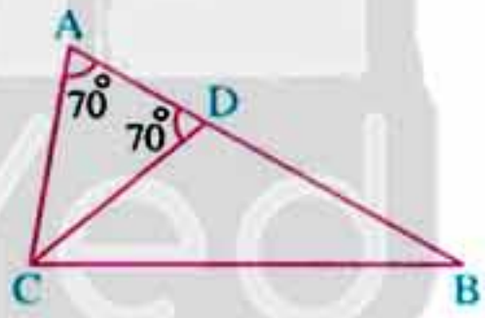



, then m (∠ ADC) = .....

(a) 62° (b) 89° (c) 91° (d) 130°

**5 In the opposite figure :**

If $\overrightarrow{CD}$ bisects ∠ BCA , m (∠ A) = m (∠ ADC) = 70°

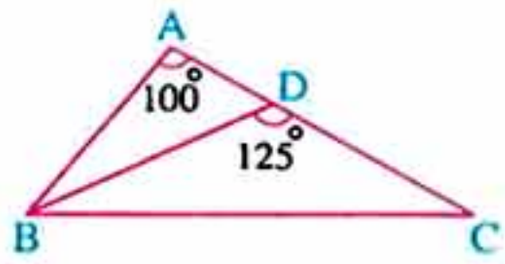



, then m (∠ B) = .....

(a) 70° (b) 30° (c) 80° (d) 40°

**6 In the opposite figure :**

ABC is a triangle , D ∈ $\overline{AC}$ and $\overrightarrow{BD}$ is the bisector of ∠ B , what is the measure of ∠ C ?

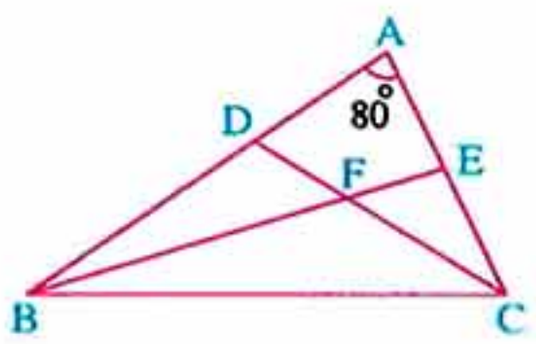



(a) 25° (b) 30° (c) 45° (d) 55°

**7 In the opposite figure :**

m (∠ A) = 80° , $\overrightarrow{BE}$ is the bisector of ∠ B , $\overrightarrow{CD}$ is the bisector of ∠ C

What is the measure of ∠ BFC ?




(a) 80° (b) 100° (c) 120° (d) 130°

Exercise 2

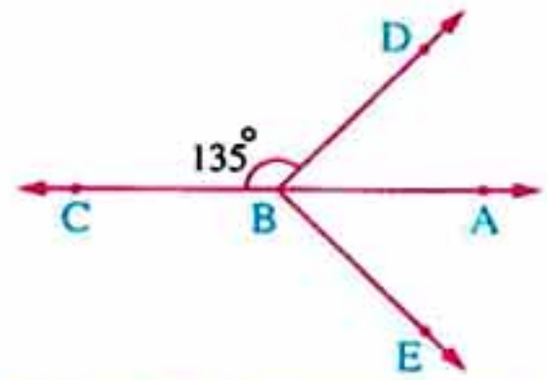
**4** **In the opposite figure :**

If B $\in \overleftrightarrow{AC}$ , m (∠ DBC) = 135°

and $\overrightarrow{BA}$ bisects ∠ DBE

**, find each of :**

m (∠ ABD) , m (∠ DBE) , m (∠ CBE)

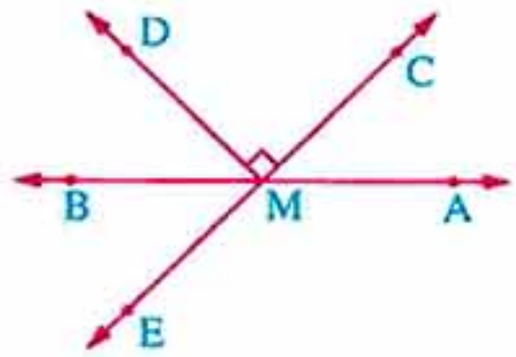



**5** **In the opposite figure :**

If $\overleftrightarrow{AB} \cap \overleftrightarrow{CE} = \{M\}$ , $\overrightarrow{MD} \perp \overleftrightarrow{CE}$ and $\overrightarrow{MB}$ bisects ∠ DME

**, find the measures of the following angles :**

∠ BME , ∠ DME , ∠ AMC and ∠ AME




**6** **In the opposite figure :**

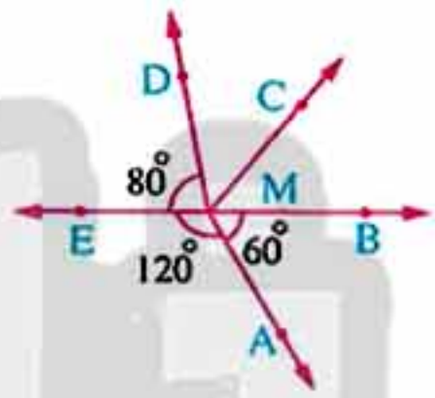
m (∠ AMB) = 60° , m (∠ AME) = 120° ,

m (∠ EMD) = 80° and $\overrightarrow{MC}$ bisects ∠ BMD

**Find :**

1 m (∠ CMD)

2 m (∠ AMC)

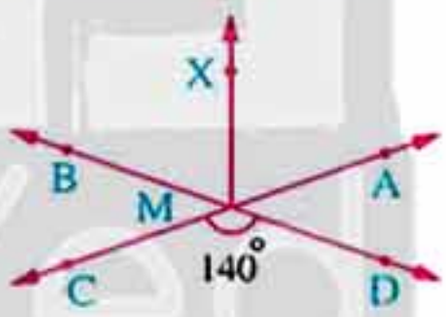



**7** **In the opposite figure :**

$\overleftrightarrow{AC} \cap \overleftrightarrow{BD} = \{M\}$ , $\overrightarrow{MX}$ bisects ∠ AMB

and m (∠ CMD) = 140°

**Find :** m (∠ DMX)




**8** **In the opposite figure :**

$\overleftrightarrow{AB} \cap \overleftrightarrow{CD} = \{M\}$ , m (∠ CMX) = 90° ,

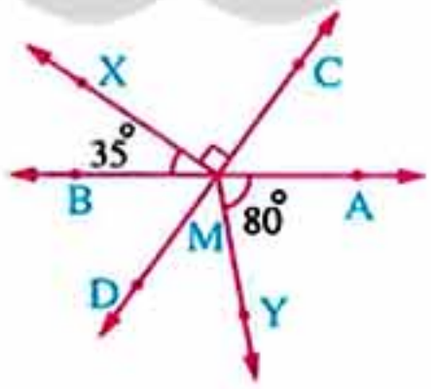
m (∠ XMB) = 35° and m (∠ AMY) = 80°

**Find :**

1 m (∠ AMD)

2 m (∠ DMY)

3 m (∠ BMY)



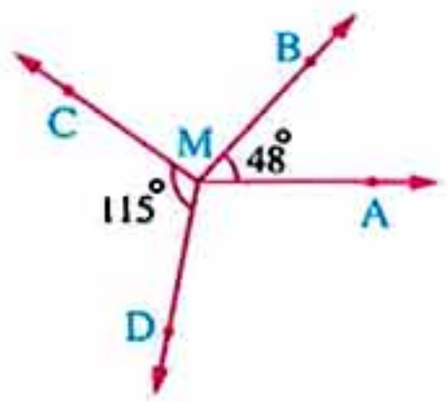

**9** **In the opposite figure :**

m (∠ BMC) = 2 m (∠ AMB) ,

m (∠ AMB) = 48°

and m (∠ DMC) = 115°

**Find :** m (∠ AMD)



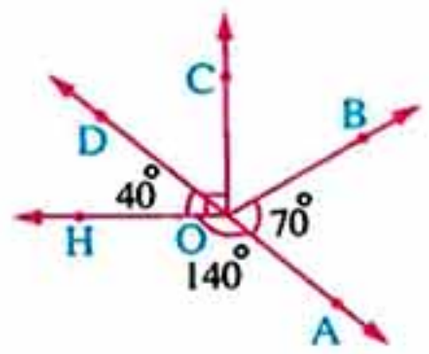
UNIT 4

**10** **In the opposite figure :**

$\overrightarrow{OC} \perp \overrightarrow{OH}$

Are $\overrightarrow{OA}$ and $\overrightarrow{OD}$ on the same straight line or not ? Why ?

**, then find :** m (∠ BOC)



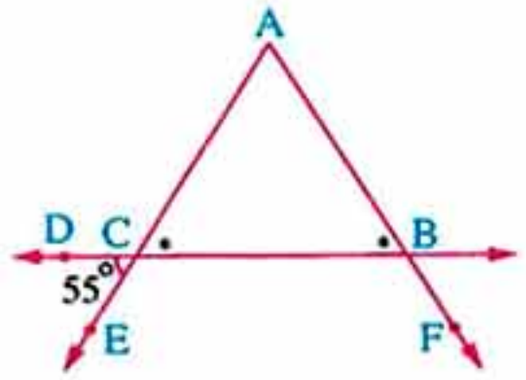

**11** **In the opposite figure :**

$D \in \overrightarrow{BC}$ , $E \in \overrightarrow{AC}$ , $F \in \overrightarrow{AB}$

, m (∠ ABC) = m (∠ ACB)

and m (∠ ECD) = 55°

**Find :** m (∠ FBC)



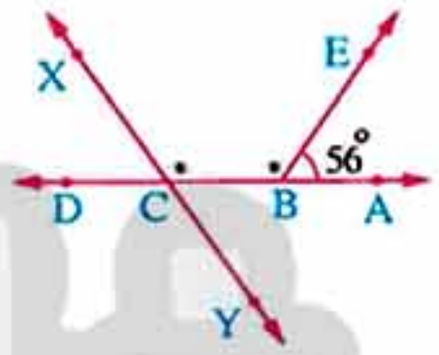

**12** **In the opposite figure :**

A , B , C and D are collinear ,

$\overleftrightarrow{XY} \cap \overleftrightarrow{BD} = \{C\}$ , m (∠ ABE) = 56°

and m (∠ EBC) = m (∠ BCX)

**Find :** m (∠ DCY)

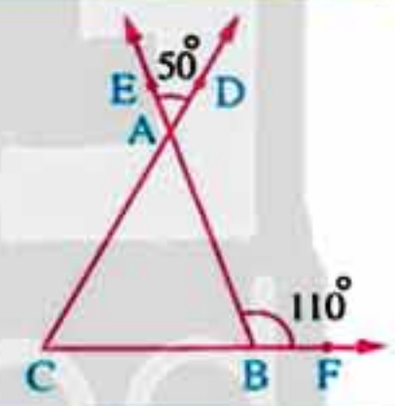



**13** **In the opposite figure :**

m (∠ DAE) = 50°

and m (∠ ABF) = 110°

**Find :** The measures of the angles of the triangle ABC



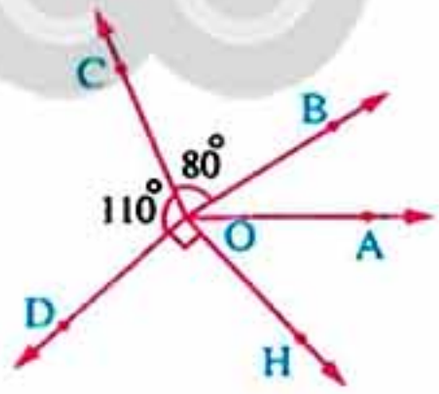

**14** **In the opposite figure :**

m (∠ BOC) = 80° , m (∠ COD) = 110° ,

m (∠ DOH) = 90°

and m (∠ AOB) : m (∠ AOH) = 2 : 3

**Find :** m (∠ AOB) and m (∠ AOH)




**For excellent pupils**

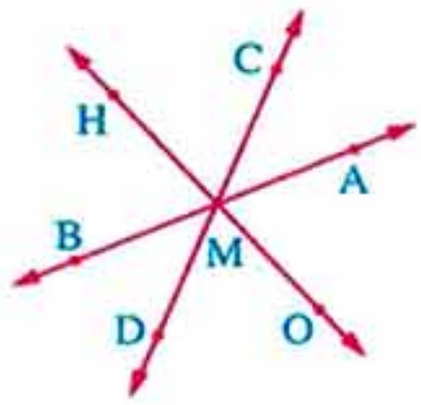
**15** **In the opposite figure :**

$\overleftrightarrow{AB} \cap \overleftrightarrow{CD} \cap \overleftrightarrow{HO} = \{M\}$ ,

m (∠ AMO) + m (∠ BMH) = 140°

and m (∠ AMC) : m (∠ DMO) = 2 : 3

**Find :** m (∠ CMH)



EXERCISE 3

# Congruence

From the school book

## 1 Complete the following :

1 Two line segments are congruent if .....

2 Two angles are congruent if .....

3 Two polygons are congruent if there is a correspondence between their vertices such that each ..... and each ..... in the first polygon is congruent to its corresponding element in .....

4 The axis of symmetry of a polygon divides it into two ..... polygons.

5 If $\overline{AB} \equiv \overline{CD}$ , then AB = .....

6 If $\overline{AB} \equiv \overline{XY}$ , then AB – XY = .....

7 If $\angle A \equiv \angle B$ and m ($\angle A$) = 50° , then m ($\angle B$) = .....°

8 If $\angle A$ supplements $\angle B$ and $\angle A \equiv \angle B$ , then m ($\angle B$) = .....°

9 If $\angle A$ complements $\angle B$ and $\angle A \equiv \angle B$ , then m ($\angle A$) = .....°

10 If C is the midpoint of $\overline{AB}$ , then $\overline{AC}$ ..... $\overline{BC}$

11 If the polygon ABCD ≡ the polygon XYZL , then $\overline{DA} \equiv$ .....

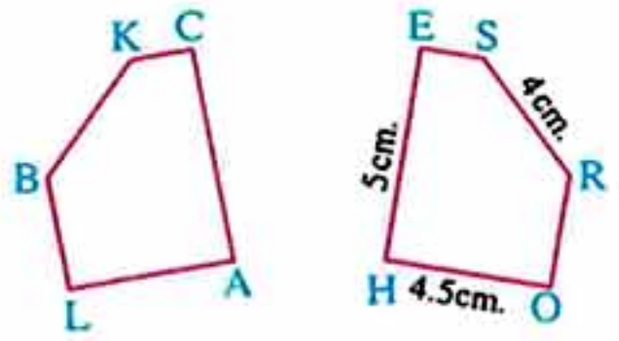
, m ($\angle$ BCD) = m ($\angle$ .....)

12 The two squares are congruent if ..... are equal in length , and the two rectangles are congruent if ..... are equal.

UNIT 4

**2** **In the opposite figure :**

The two pentagons shown are congruent.




**Complete :**

1 B corresponds to .....

2 The polygon BLACK is congruent to the polygon .....

3 KB = ..... cm.

4 m (∠ E) = m (∠ .....)

5 CA = ..... cm.

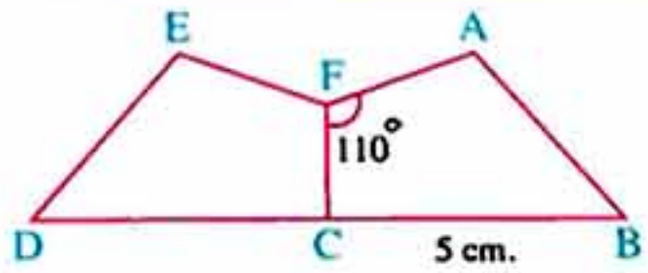
6 m (∠ A) = m (∠ .....)

**3** **In the opposite figure :**

If C ∈ $\overleftrightarrow{BD}$ , m (∠ AFC) = 110° , BC = 5 cm.

and the polygon ABCF ≡ the polygon EDCF

**, complete the following :**




1 AB = .....

2 AF = .....

3 m (∠ E) = m (∠ .....)

4 m (∠ B) = m (∠ .....)

5 m (∠ FCD) = m (∠ .....)

6 m (∠ EFC) = ..... °

7 BD = ..... cm.

8 m (∠ FCD) = ..... °

9 m (∠ AFE) = ..... °

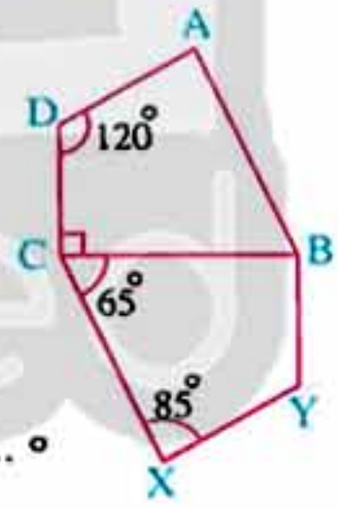
10 The axis of symmetry of the polygon ABDEF is .....

**4** **In the opposite figure :**

If $\overline{DC} \perp \overline{BC}$ , m (∠ ADC) = 120° , m (∠ BCX) = 65° , m (∠ X) = 85°

and the polygon ABCD ≡ the polygon XCBY

**, complete the following :**




1 AB = .....

2 XY = .....

3 CD = .....

4 $\overline{BC}$ is ..... side.

5 m (∠ Y) = ..... °

6 m (∠ A) = ..... °

7 m (∠ ABC) = .....°

8 m (∠ YBC) = ..... °

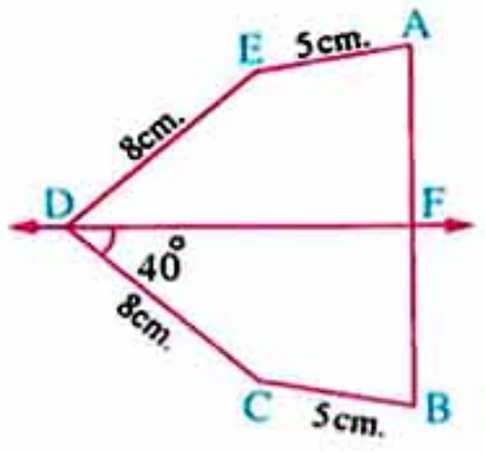
**5** **In the opposite figure :**

If m (∠ A) = m (∠ B) , m (∠ C) = m (∠ E) , $\overleftrightarrow{FD}$ bisects ∠ EDC ,

$\overleftrightarrow{FD}$ is the axis of symmetry of $\overline{AB}$ , AE = BC = 5 cm. ,

CD = ED = 8 cm. , AB = 12 cm. and m (∠ CDF) = 40°

**, complete the following :**




1 m (∠ AFD) = .....°

2 m (∠ CDE) = .....°

3 The length of $\overline{BF}$ = ..... cm.

4 The two figures ..... and ..... are congruent.

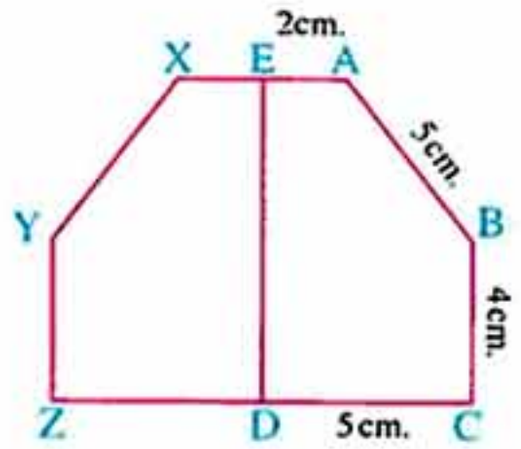
Exercise 3

**6** **In the opposite figure :**

If D $\in \overleftrightarrow{CZ}$ and the figure ABCDE ≡ the figure XYZDE ,

AE = 2 cm. , BC = 4 cm. and AB = CD = 5 cm.

, **find :** The perimeter of the figure ABCZYX

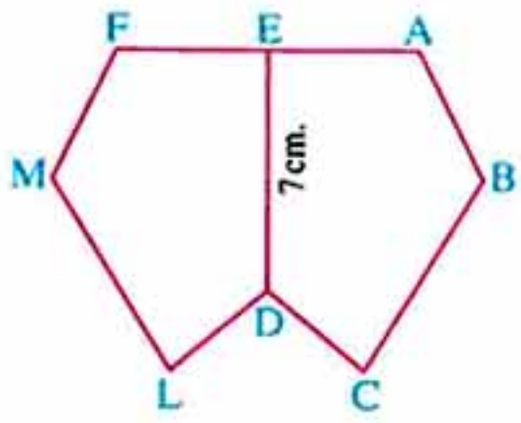



**7** **In the opposite figure :**

If E $\in \overleftrightarrow{AF}$ , the perimeter of the figure ABCDE = 27 cm. ,

DE = 7 cm. and the polygon ABCDE ≡ the polygon FMLDE

, **find :** The perimeter of the figure ABCDLMF

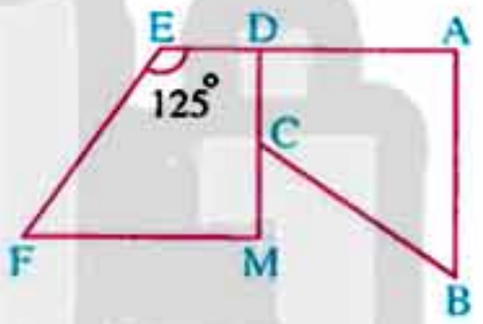



**8** **In the opposite figure :**

If the figure ABCD ≡ the figure MFED ,

C is the midpoint of $\overline{MD}$ and MC = 3 cm.

, **complete the following :**




1 m (∠ A) = m (∠ .....) | 2 m (∠ ADC) = m (∠ .....) | 3 m (∠ B) = m (∠ .....)

4 m (∠ BCD) = ..... ° | 5 m (∠ BCM) = ..... ° | 6 AE = ..... cm.

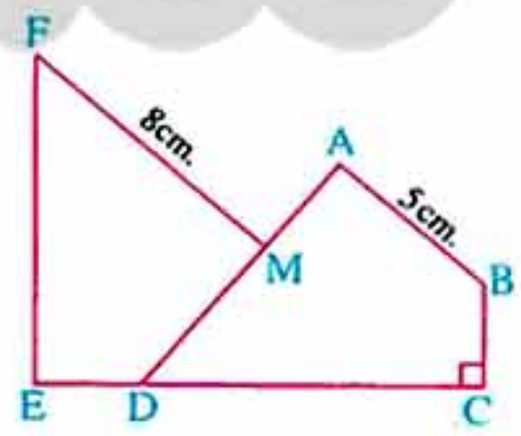
**For excellent pupils**

**9** **In the opposite figure :**

If D $\in \overleftrightarrow{CE}$ , $\overline{BC} \perp \overline{CD}$

and the figure ABCD ≡ the figure MDEF

, **complete the following :**




1 m (∠ A) = m (∠ .....) | 2 m (∠ CDA) = m (∠ .....) | 3 m (∠ E) = .....°

4 AM = ..... cm. | 5 m (∠ B) + m (∠ F) = .....°

# Summary of the first part of unit 4
## "From lesson I to lesson 3"

- The acute angle , its measure is more than 0° and less than 90°
- The obtuse angle , its measure is more than 90° and less than 180°
- The zero angle , its measure is 0° , and the right angle its measure is 90°
- The straight angle , its measure is 180° , and the reflex angle its measure is more than 180° and less than 360°
- The sum of measures of two complementary angles is 90° and the sum of measures of two supplementary angles is 180°
- Two adjacent angles formed by a straight line and a ray with a starting point on this straight line , are supplementary.
- If the two adjacent angles are supplementary , then their outer sides are on the same straight line.
- If the two adjacent angles are complementary , then their outer sides are perpendicular.
- The two vertically opposite angles are equal in measure.
- The sum of the measures of the accumulative angles at a point is 360°
- The angle bisector is the ray that divides the angle into two equal angles in measure.
- Two line segments are congruent if they are equal in length.
- Two angles are congruent if they are equal in measure.
- Two polygons are congruent if there is correspondence between their vertices such that each side and each angle in the first polygon is congruent to its corresponding element in the other polygon.
- If the two polygons are congruent , then each side and each angle in one of them is congruent to its corresponding element in the other polygon.

# Exams on the first part of unit four from lesson (1) to lesson (3)

## Model 1

### Answer the following questions :

**1 Choose the correct answer from the given ones :**

1 Two complementary angles are two angles whose sum of their measures is .....

(a) 90° (b) 180° (c) 100° (d) 45°

2 The sum of measures of the accumulative angles at a point equals the sum of measures of ..... angles.

(a) 2 right (b) 3 right (c) 4 right (d) 5 right

3 The obtuse angle supplements ..... angle.

(a) an obtuse (b) a right (c) an acute (d) a straight

4 The two bisectors of two adjacent supplementary angles .....

(a) are perpendicular. (b) are parallel.

(c) are coincident. (d) included an obtuse angle between them.

5 If $\angle A$ supplements $\angle B$ , $\angle A \equiv \angle B$ , then m ($\angle B$) = .....

(a) 45° (b) 90° (c) 180° (d) 360°

6 $\overrightarrow{AB} \cup \overrightarrow{AC}$ = .....

(a) $\overrightarrow{BC}$ (b) $\angle BCA$ (c) $\angle BAC$ (d) $\overrightarrow{AC}$

**2 Complete the following :**

1 If two straight lines intersect , then each two vertically opposite angles are .....

2 The angle whose measure is 50° complements an angle of measure .....° and supplements an angle of measure .....°

3 Two adjacent angles formed by a straight line and a ray with a starting point on this straight line , are .....

4 If $\overline{AB} \equiv \overline{XY}$ , then AB – XY = .....

5 Two angles are congruent if they are .....

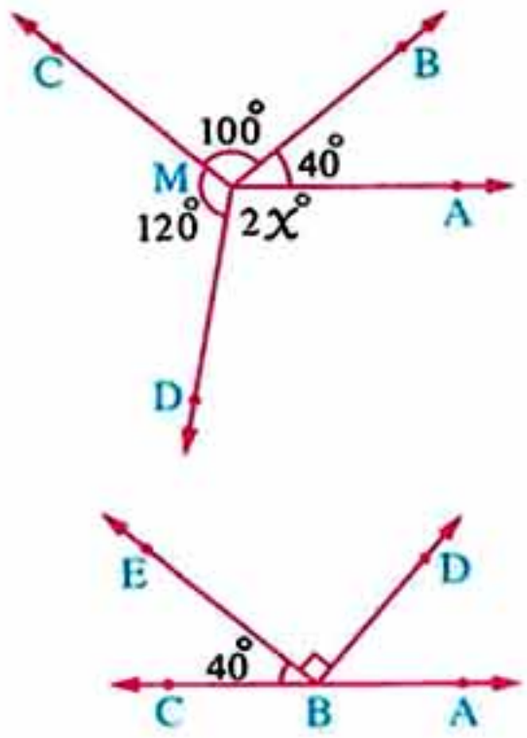
UNIT 4

**3** **[a] In the opposite figure :**

$m(\angle AMB) = 40°$ , $m(\angle BMC) = 100°$

, $m(\angle CMD) = 120°$ and $m(\angle AMD) = 2x°$

Find the value of $x$




**[b] In the opposite figure :**

$B \in \overleftrightarrow{AC}$ , $m(\angle EBC) = 40°$

and $m(\angle DBE) = 90°$

**Find :** $m(\angle ABD)$

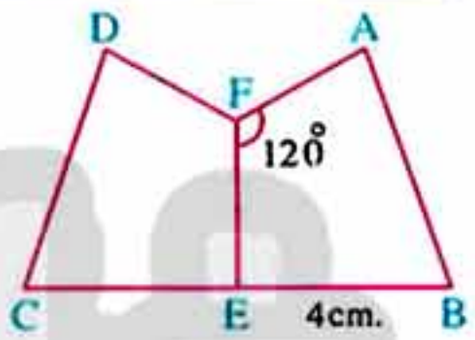



**4** **In the opposite figure :**

$E \in \overline{BC}$ , $m(\angle AFE) = 120°$

, $BE = 4$ cm. and

the polygon ABEF ≡ the polygon DCEF




**Complete the following :**

1 DF = .....

2 $m(\angle ABE) = m(\angle$ .....$)$

3 $m(\angle DFE) =$ .....°

4 $\overline{AB} \equiv$ .....

5 $m(\angle FEB) =$ .....°

6 $m(\angle AFD) =$ .....°

7 The axis of symmetry of the figure ABCDF is .....

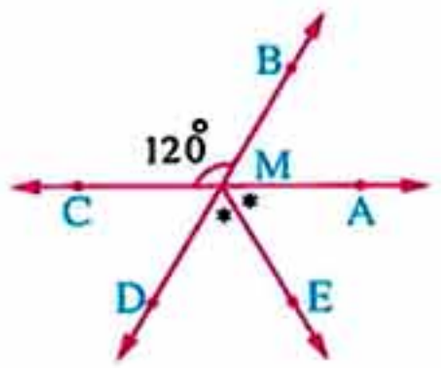
**5** **[a] In the opposite figure :**

$\overleftrightarrow{AC} \cap \overleftrightarrow{BD} = \{M\}$

, $m(\angle BMC) = 120°$

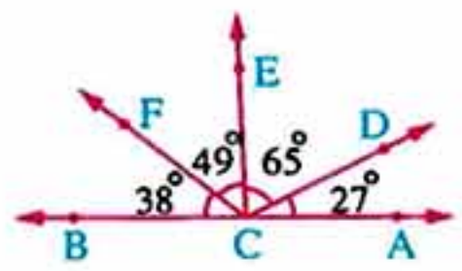
and $\overrightarrow{ME}$ bisects $\angle AMD$

**Find :** $m(\angle EMD)$




**[b] In the opposite figure :**

Are $\overrightarrow{CA}$ and $\overrightarrow{CB}$ on the same straight line ? Why ?



## Model 2

### Answer the following questions :

**1 Choose the correct answer from the given ones :**

1 If m (∠ A) = 70° , then m (reflex ∠ A) = .....

(a) 20° (b) 110° (c) 290° (d) 70°

2 If m (∠ X) + m (∠ Y) = 180° , then ∠ X and ∠ Y are .....

(a) equal in measure. (b) complementary. (c) supplementary. (d) adjacent.

3 The sum of measures of 6 accumulative angles at a point ..... the sum of measures of 3 accumulative angles at a point.

(a) = (b) < (c) > (d) ≠

4 If m (∠ A) = 2 m (∠ B) and ∠ A supplements ∠ B , then m (∠ A) = .....

(a) 60° (b) 120° (c) 45° (d) 90°

5 The type of the angle of measure 89° 60̀ is .....

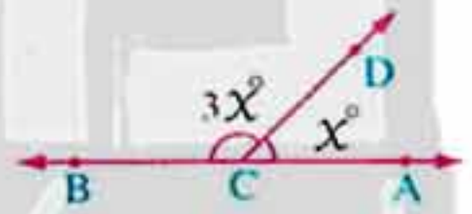
(a) acute. (b) straight. (c) right. (d) obtuse.

6 **In the opposite figure :**

C ∈ $\overleftrightarrow{AB}$ , then $x$ = .....

(a) 135° (b) 90°

(c) 45° (d) 60°




**2 Complete the following :**

1 Two adjacent angles whose outer sides are perpendicular are .....

2 The right angle is complemented by ..... angle.

3 Two line segments are congruent if they are .....

4 The sum of measures of the accumulative angles at a point is .....°

5 If ∠ A complements ∠ B and ∠ A ≡ ∠ B , then m (∠ B) = .....°

**3 [a] In the opposite figure :**

If m (∠ AMB) = 50°

, m (∠ BMC) = 60°

, m (∠ DME) = 40°

and $\overrightarrow{MA} \perp \overrightarrow{ME}$

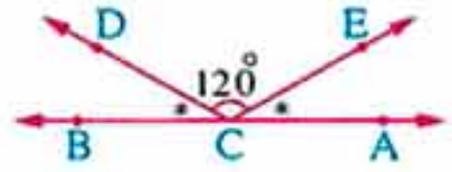
, **find :** m (∠ CMD)

UNIT 4

**[b] In the opposite figure :**

$C \in \overleftrightarrow{AB}$ , m (∠ ECD) = 120°

and m (∠ ACE) = m (∠ BCD)




**Find :** m (∠ ACE)

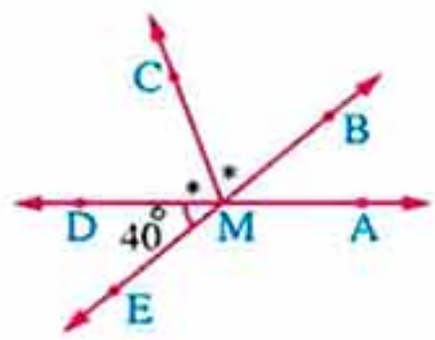
**4** **[a] In the opposite figure :**

$\overrightarrow{MC}$ bisects ∠ BMD

, $\overleftrightarrow{AD} \cap \overleftrightarrow{BE} = \{M\}$

and m (∠ DME) = 40°

**Find :** m (∠ AMC)




**[b] In the opposite figure :**

The two polygons ABCD , EFGH are congruent ,

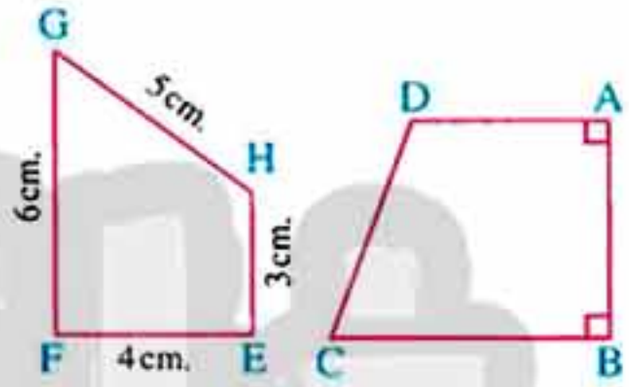
EF = 4 cm. , FG = 6 cm.

, GH = 5 cm. , HE = 3 cm.

, m (∠ A) = m (∠ B) = 90°

**Find :** 1 The perimeter of the polygon ABCD

2 m (∠ F) , m (∠ E)




**5** **[a] In the opposite figure :**

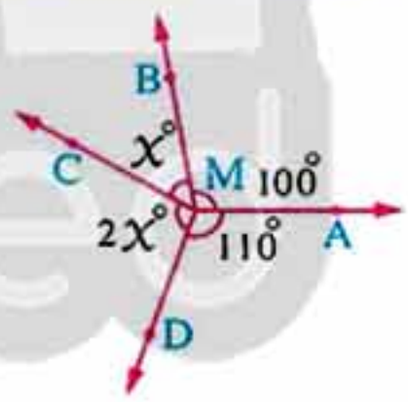
m (∠ AMD) = 110°

, m (∠ AMB) = 100°

, m (∠ BMC) = $\mathcal{X}$°

and m (∠ CMD) = 2 $\mathcal{X}$°

Find the value of $\mathcal{X}$

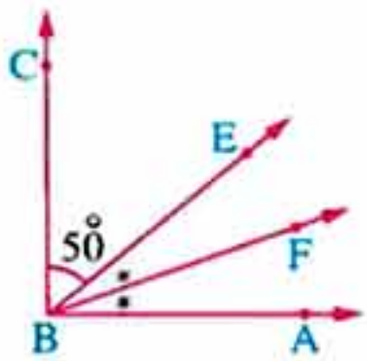



**[b] In the opposite figure :**

$\overrightarrow{BA} \perp \overrightarrow{BC}$ , $\overrightarrow{BF}$ bisects ∠ ABE

and m (∠ EBC) = 50°

**Find :** m (∠ FBC)



# Accumulative tests on Algebra and Statistics

## Accumulative test 1 on lesson 1 – unit 1

**1 Choose the correct answer from those given :**

1 The number ..... is a positive rational number.

(a) $|-2|$ (b) $-5$ (c) $-\frac{3}{7}$ (d) zero

2 The number $\frac{5}{x+3}$ is a rational number , if $x \neq$ .....

(a) $-3$ (b) zero (c) 3 (d) 5

3 $\frac{2}{3} =$ .....

(a) $\frac{1}{3}$ (b) $\frac{4}{6}$ (c) $\frac{3}{2}$ (d) $\frac{4}{3}$

4 The required condition for : $\frac{x+3}{2x-5}$ to be a rational number is .....

(a) $x \neq 0$ (b) $x \neq -5$ (c) $x \neq \frac{5}{2}$ (d) $x \neq -3$

---

**2 Complete each of the following :**

1 If $\frac{6}{x-4}$ is a rational number , then $x \neq$ .....

2 The number $\frac{a}{b}$ is a positive rational number if ab > .....

3 If $\frac{4-x}{x-3} = 0$ , then $x =$ .....

4 The number 0.45 in the form of a rational number is .....

---

**3 Write each of the following on the form $\frac{a}{b}$ in the simplest form :**

1 $|-2.25|$ 2 35 %

---

**4 Write three rational numbers expressing each of the following rational numbers :**

1 $\frac{5}{7}$ 2 $\frac{2}{9}$

## Accumulative test 2 till lesson 2 – unit 1

**1 Choose the correct answer from those given :**

1 $|\frac{-3}{7}|$ ..... zero

(a) > (b) < (c) = (d) ≤

2 $\frac{4}{7}$ ..... $\frac{3}{5}$

(a) > (b) < (c) = (d) ≥

3 The number of integers lying between $\frac{7}{3}$ , $\frac{11}{6}$ is .....

(a) zero (b) 1 (c) 2 (d) infinite number

4 The rational number $\frac{x}{-3}$ is negative if $x$ .....

(a) $> 0$ (b) $< 0$ (c) $\leq 0$ (d) $= 0$

**2 Complete each of the following :**

1 $0.6 =$ ..... $\left(\text{in the form } \frac{a}{b}\right)$

2 $\frac{1}{4} >$ ..... $> \frac{1}{8}$ (complete by a rational number)

3 The required condition for : $\frac{2x}{x-4}$ to be a rational number is $x \neq$ .....

4 The number of integers lying between $\frac{4}{5}$ , $\frac{7}{5}$ is .....

**3 Find two rational numbers lying between :** $\frac{1}{5}$ , 0.25

**4 Find three rational numbers lying between :**

$\frac{5}{4}$ , $\frac{2}{3}$ such that one of them is an integer.

## Accumulative test 3 till lesson 3 – unit 1

**1 Choose the correct answer from those given :**

1 If $\frac{x+4}{x-3}$ is not a rational number , then $x-2=$ .....

(a) 1 (b) $-3$ (c) 4 (d) $\frac{2}{3}$

2 The rational number $\frac{x}{-4}$ is positive , if $x$ ..... zero.

(a) $>$ (b) $<$ (c) $\geq$ (d) $=$

3 $\frac{3}{5}+$ ..... $=0$

(a) $\frac{3}{5}$ (b) $\frac{5}{3}$ (c) $-\frac{5}{3}$ (d) $-\frac{3}{5}$

4 The additive inverse of $\left(\frac{2}{5}\right)^0$ is .....

(a) $-1$ (b) $\frac{2}{5}$ (c) 1 (d) $\frac{-2}{5}$

**2 Complete each of the following :**

1 The additive identity in $\mathbb{N}$ is .....

2 The remainder of subtracting $-\frac{1}{5}$ from $\frac{4}{5}$ is .....

3 $20\ \% - \left|-\frac{1}{5}\right| =$ .....

4 The additive inverse of $\left|\frac{-5}{7}\right|$ is .....

**3** If $\frac{x-2}{x+3}=0$

**Find three rational numbers lying between :** $\frac{1}{x}$ , $\frac{2}{1+x}$

**4** If $x=\frac{3}{8}$ , $y=\frac{1}{2}$ , $z=-\frac{3}{4}$

Find the value of : $(x-y)+z$

## Accumulative test 4 till lesson 4 – unit 1

**1 Choose the correct answer from those given :**

1 If $\frac{|-5|}{x} = 1$ , then $x =$ .....

(a) $-5$ (b) 5 (c) 1 (d) $-1$

2 $\frac{a}{b} = \frac{2}{3}$ , then $\frac{3a}{2b} =$ .....

(a) $\frac{5}{6}$ (b) $\frac{6}{5}$ (c) 1 (d) $\frac{3}{2}$

3 $\frac{1}{4}$ of $\frac{1}{2}$ = .....

(a) $\frac{3}{10}$ (b) $\frac{1}{4}$ (c) $\frac{1}{3}$ (d) $\frac{1}{8}$

4 The rational number that has no multiplicative inverse is .....

(a) 1 (b) zero (c) $-1$ (d) 2

**2 Complete each of the following :**

1 The multiplicative inverse of $\frac{3}{4}$ is .....

2 $3\frac{2}{5} \times$ ..... $= 1$

3 If $\frac{x-3}{x+5} = 0$ , then $x =$ .....

4 $\left(\frac{3}{8} + \frac{2}{8}\right) \div \frac{5}{3} =$ .....

**3 If $a = \frac{7}{4}$ , $b = -\frac{1}{2}$ , find the value of : $\frac{a-b}{a+b}$**

**4 Using the distribution property , find the value of :**

$\frac{3}{7} \times 9 + \frac{3}{7} \times 6 - \frac{3}{7}$

# Accumulative tests on Geometry

## Accumulative test 1 on lesson 1 – unit 4

**1 Choose the correct answer from those given :**

1 The two complementary equal angles , the measure of each angle is .....

(a) 180° (b) 45° (c) 360° (d) 90°

2 If a line segment is extended from only one terminal without limit , then it is .....

(a) a line segment. (b) a ray. (c) a straight line. (d) an angle.

3 The type of the angle of measure 89° $5\hat{3}$ is .....

(a) acute. (b) right. (c) obtuse. (d) straight.

4 The acute angle supplements the ..... angle.

(a) right (b) acute (c) obtuse (d) straight

**2 Complete each of the following :**

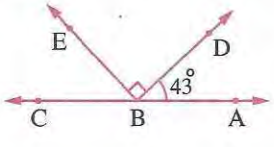
1 The angle whose measure is 70° supplements an angle of measure .....

2 If m (∠ A) = 110° , then m (reflex ∠ A) = .....

3 The two adjacent complementary angles , their outer sides are .....

4 If the ratio between the measures of two supplementary angles is 1 : 2 , then the measure of the smaller angle is .....

**3 In the opposite figure :**

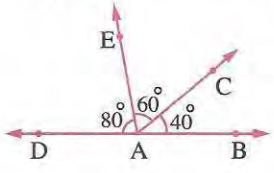



m (∠ DBE) = 90°

, m (∠ ABD) = 43°

**Find :** m (∠ EBC) , m (∠ DBC)

**4 In the opposite figure :**




m (∠ BAC) = 40° , m (∠ CAE) = 60°

, m (∠ EAD) = 80°

Are $\overrightarrow{AD}$ , $\overrightarrow{AB}$ on the same straight line ?

Give reason.

## Accumulative test 2 till lesson 2 – unit 4

**1 Choose the correct answer from those given :**

1 If the two vertically opposite angles are complementary , then the measure of each angle equals .....

(a) 90° (b) 180° (c) 45° (d) 360°

2 If m (∠ A) = 2 m (∠ B) , ∠ A supplements ∠ B , then m (∠ B) = .....

(a) 30° (b) 60° (c) 90° (d) 120°

3 If $\overrightarrow{BD}$ bisects ∠ ABC , then m (∠ ABC) ..... m (∠ ABD)

(a) $\frac{1}{3}$ (b) $\frac{1}{2}$ (c) 2 (d) 3

4 The right angle supplements ..... angle.

(a) a zero (b) an acute (c) a right (d) an obtuse

**2 Complete each of the following :**

1 The sum of measures of the accumulative angles at a point is .....

2 The two bisectors of the two supplementary adjacent angles are .....

3 The right angle complements ..... angle.

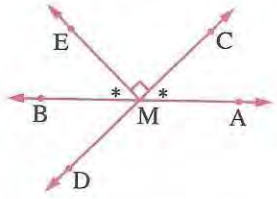
4 If ∠ A supplements ∠ B , ∠ A ≡ ∠ B , then m (∠ A) = .....°

**3 In the opposite figure :**

$\overleftrightarrow{AB} \cap \overleftrightarrow{CD} = \{M\}$ , m (∠ CME) = 90°

, m (∠ AMC) = m (∠ EMB)

**Find :** m (∠ AMC) , m (∠ AMD)

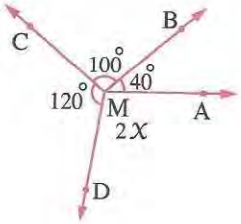



**4 In the opposite figure :**

m (∠ AMB) = 40° , m (∠ BMC) = 100°

, m (∠ CMD) = 120° , m (∠ AMD) = 2 $x$

**Find :** the value of $x$



## Accumulative test 3 till lesson 3 – unit 4

**1 Choose the correct answer from those given :**

1 The two vertically opposite angles are .....

(a) complementary. (b) supplementary

(c) adjacent. (d) congruent.

2 If ∠ A complements ∠ B , ∠ B supplements ∠ C , m (∠ A) = 35° , then m (∠ C) = .....

(a) 55° (b) 145° (c) 125° (d) 130°

3 If AB = CD , then $\overline{AB}$ ..... $\overline{CD}$

(a) ≡ (b) = (c) ⊥ (d) bisects

4 If $\overrightarrow{XY}$ bisects ∠ LXN , m (∠ LXY) = 60° , m (∠ LXN) = .....

(a) 30° (b) 60° (c) 120° (d) 360°

**2 Complete each of the following :**

1 If $\overline{AB} \equiv \overline{CD}$ , then AB ÷ CD = .....

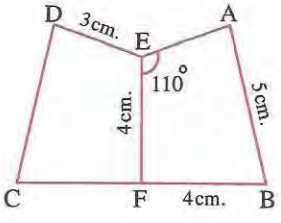
2 If $\overline{AB} \equiv \overline{CD}$ , AB = 5 cm. , then AB + CD = ..... cm.

3 If X is the midpoint of $\overline{YZ}$ , then $\overline{YX} \equiv$ .....

4 ∠ A and ∠ B are supplementary angles , then m (∠ A) = .....°

**3 In the opposite figure :**

If F ∈ $\overline{BC}$ , the figure ABFE ≡ the figure DCFE




**Complete the following :**

1 The axis of symmetry of the figure is .....

2 AE = ..... cm. 3 ∠ D ≡ ∠ .....

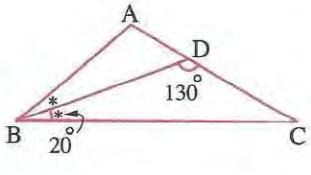
4 m (∠ FED) = .....° 5 m (∠ EFB) = .....°

6 The perimeter of the figure ABCDE = ..... cm.

**4 In the opposite figure :**

$\overrightarrow{BD}$ bisects ∠ ABC , m (∠ DBC) = 20°

, m (∠ CDB) = 130°




**Find :** m (∠ A)

# FIRST ALGERBA

## Q1: Choose the correct answer:

1) The additive element in Q is .....

(a) 1 (b) -1 (c) 0 (d) 2

2) If $\frac{3}{3+x}$ is a rational number, then x ≠ .....

(a) 3 (b) -3 (c) 0 (d) 2

3) Subtracting $\frac{1}{3}$ from $\frac{4}{3}$ gives .....

(a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) $\frac{5}{3}$ (d) 1

4) The rational number $\frac{a}{b}$ is positive if .....

(a) a b > 0 (b) a b < 0 (c) a + b = 0 (d) a > b

5) If a= 2, b= 6, then which of the following is not rational?

(a) $\frac{b}{a}$ (b) $-\frac{2}{a}$ (c) $\frac{0}{a+b}$ (d) $\frac{2b}{a-2}$

6) The following rational number $\frac{x}{-5}$ is negative if x ..... zero

(a) > (b) < (c) = (d) ≤

7) Which of the following equals $\frac{3}{5}$ ?

(a) 6 % (b) 3 % (c) 60 % (d) 120 %

8) The rational number $\frac{x-5}{x+3}$ =0, then x =.....

(a) 3 (b) -3 (c) 5 (d) -5

9) If $\frac{3}{a} < \frac{3}{b}$ where a b > 0, then a ..... b

(a) > (b) < (c) = (d) ≤

10) If $\frac{a}{7} > \frac{b}{9}$ , then 9a ..... 7b

(a) > (b) < (c) = (d) ≤

# FIRST ALGERBA

11) If $x < 0 < y, |x| > y$, Then $x + y$ ..... zero

(a) > (b) < (c) = (d) ≥

12) The rational number opposite to $\frac{1}{3}$ on the number line is .....

(a) $\frac{1}{3}$ (b) $-\frac{1}{3}$ (c) 0.3 (d) $0.\dot{3}$

13) The number of rational numbers lying between $\frac{1}{3}$ and $\frac{2}{3}$

(a) 1 (b) 2 (c) 0 (d) infinite number

14) The number of integers lying between $\frac{2}{5}$ and $\frac{11}{3}$

(a) 3 (b) 2 (c) 0 (d) infinite number

15) The number of integers lying between $\frac{1}{3}$ and $\frac{2}{3}$

(a) 2 (b) 5 (c) 0 (d) infinite number

16) The integer lying between $\frac{7}{6}$ and $\frac{15}{7}$ is .....

(a) 1 (b) 2 (c) 0 (d) 7

17) If $\frac{a}{3} > \frac{b}{3}$, then a ..... b

(a) > (b) < (c) = (d) ≥

18) $\frac{2}{5}$ = ..... %

(a) 0.4 (b) 40 (c) 50 (d) 25

19) If $|k| = 7$, then k = .....

(a) -7 (b) 7 (c) ±7 (d) Ø

20) $0.7 + 0.\dot{3}$ = .....

(a) 1 (b) 3.7 (c) $0.\dot{3}7$ (d) $1\frac{1}{30}$

21) The number $\frac{x}{|x| - 2}$ does not represent a rational is x?

(a) zero (b) -1 (c) 5 (d) ± 2

# FIRST ALGERBA

## Q2: Complete the following:

1) The additive inverse of $(-5)^{zero}$ is .....

2) The sum of any rational number and its additive inverse equal .....

3) If $\frac{x+3}{x-3}$ is equal to zero then x = .....

4) $|-0.4|$ = ..... %

5) If $\frac{x+3}{x-3}$ is a rational number, then x ≠ .....

6) The additive inverse of the number $|-\frac{4}{3}|$ is .....

7) If three times a number is 27, then $\frac{1}{3}$ of that number equals .....

8) If $\frac{4}{7} + x = 0$, Then x = .....

9) The number which is equal to its additive inverse is .....

10) $\frac{3}{2} \times \frac{5}{9}$ = .....

## Q3: Answer the following:

1) Find three rational numbers lying between $\frac{2}{3}$ and $\frac{3}{5}$

2) If $\frac{x-2}{x+3} = 0$, Find three rational numbers lying between $\frac{1}{x}$ and $\frac{2}{1+x}$

3) What increase of: $\frac{3}{5}$ than $\frac{2}{7}$

4) Subtract $-\frac{3}{5}$ from $\frac{2}{7}$

5) Using the addition properties in Q, Find the result of each of the following in the simplest form:

a. $\frac{6}{35} + (-\frac{5}{11}) + \frac{19}{35} + \frac{10}{22}$

6) If $x = \frac{5}{6}$, $y = -\frac{1}{3}$ and $z = \frac{1}{2}$ , Find the value of each of the following:

a. x + y  b. ( y + z ) - x  c. x - y

7) If $a = \frac{2}{5}$, $b = -\frac{3}{5}$, Find value of $(a - b)^3$

# SECOND GEOMETRY

## Q1: Choose the correct answer:

1) If m(∠A) + m( ∠B) = 180° ∠A and∠B are .....

(a) equal in measure (c) complementary
(b) supplementary (d) adjacent

2) If angle measure Y complements an angle of measure .....

(a) 180° - Y (b) 90° - Y (c) 180° + Y (d) 90° + Y

3) If m(∠A) = 2m( ∠B), and ∠B is an obtuse angle, then ∠A is .....

(a) acute (b) right (c) reflex (d) obtuse

4) The right angle complements ..... angle.

(a) acute (b) right (c) zero (d) obtuse

5) Zero angle suplements ..... angle

(a) acute (b) right (c) straight (d) obtuse

6) Obtuse angle supplements ..... angle.

(a) acute (b) right (c) reflex (d) obtuse

7) If∠A supplements∠B and ∠A ≡ ∠B, Then m(∠B) = .....

(a) 360 ° (b) 90 ° (c) 180 ° (d) 45 °

8) The two bisectors of two adjacent supplementary angles .....

(a) are perpendicular (c) are parallel
(b) are coincident (d) included an acute angle

9) If the two vertically angles are complementary angles, the the measure of each angle is .....

(a) 50 ° (b) 90 ° (c) 180 ° (d) 45 °

# SECOND GEOMETRY

10) The angle of measure 179° is a/an ..... angle

(a) obtuse (b) acute (c) reflex (d) straight

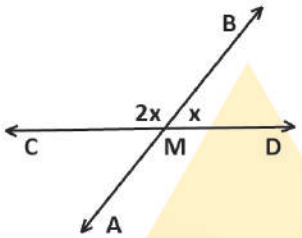
11) If m( ∠A)= 80°, then m( reflex A) = .....

(a) 360 ° (b) 280 ° (c) 90 ° (d) 180 °

12) If two staight line AB and CD intersect at M ,then m( ∠AMC) = .....

(a) 30 ° (c) 20 °

(b) 60 ° (d) 120 °




13) If ∠X complements ∠Y, m(∠X) = 2m( ∠Y), then m(∠Y)= .....

(a) 45 ° (b) 30 ° (c) 60 ° (d) 90 °

14) The sum of accumulative angles at a point equals the sum of the measures of ..... angles.

(a) 2 right (b) 3 right (c) 4 right (d) 5 right

15) The two vertically opposite angles are complementary, then the measure of each angle equals .....

(a) 45 ° (b) 30 ° (c) 60 ° (d) 90 °

16) If $\overline{AB} \cong \overline{CD}$, Then AB ÷ CD =.....

(a) 0 (b) 1 (c) AB (d) 2



17) If two straight lines intersect, then each two vertically angles are .....

(a) supplementary (c) equal in measure

(b) complementary (d) adjacent

18) If the ratio of two supplementary angles is 5 : 13, then the measure of the smaller angle is .....

(a) 50 ° (b) 130 ° (c) 150 ° (d) 180 °

# SECOND GEOMETRY

## Q2: Complete the following:

1) If two adjacent angles are complementary, then their outer sides are .....

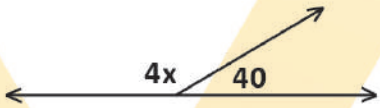
2) If two adjacent angles are supplementary, then their outer sides are .....

3) The shape ABCD $\angle$ XYZL, then m($\angle$B) = m($\angle$.....)

4) The sum of measure of accumulative angles at a point equals ..... °

5) If $\angle$A complements $\angle$B and m($\angle$A) = $\frac{2}{3}$ m($\angle$B), then m($\angle$B) = ..... °

6) Find the value of x = .....




7) If the ratio between the measures of two complementary angles is 2 : 7, then the measure of the greater angle equals ..... °

8) Two angles congruent if .....

9) Two line segments congruent if .....

10) Two adjacent angles formed by a straight line and ray with starting point on the straight line are .....

11) If D is a midpoint of $\overline{XY}$, then XD $\equiv$ .....

12) If a line segement extended from both sides to infinity, then it is called .....

13) If $\overline{AB} \equiv \overline{XY}$, and AB = 7 cm , then AB + XY = ..... cm

14) Two polygons are congruent if their corresponding angles are ....., their corresponding sides are .....

15) The axis of symmetry of polygon divides it into two .....polygons

# SECOND GEOMETRY

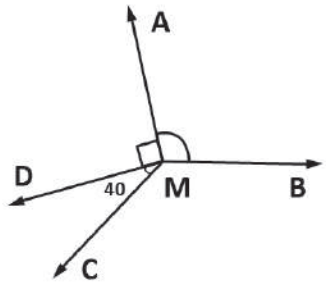
## Q3: Answer the following:

1) In opposite figure:

$m(\angle AMB) = 110°$ , $m(\angle AMD) = 90°$

$m(\angle DMC) = 40°$

Find: $m(\angle BMC)$

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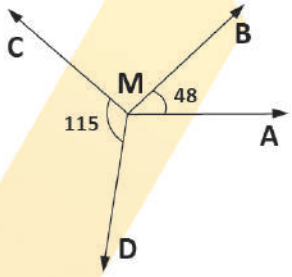
2) In the opposite figure:

$m(\angle BMC) = 2m(\angle AMB)$,

$m(\angle AMB) = 48°$

and $m(\angle DMC) = 115°$

Find: $m(\angle AMD)$

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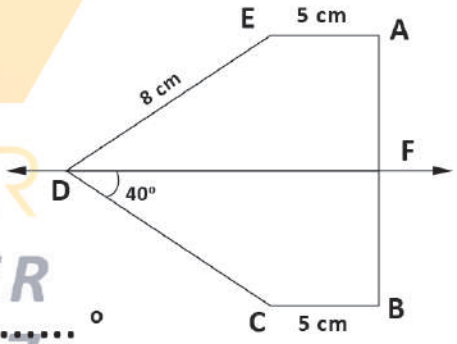
3) If $m(\angle A) = m(\angle B)$, $m(\angle C) = m(\angle E)$

FD bisects $\angle EDC$, FD is the axis of symmetry

of AB , AE = BC = 5 cm, CD = ED = 8 cm,

AB = 12 cm, and $m(\angle CDF) = 40°$




Complete the following:

1) $m(\angle AFD)$ = ..... °  2) $m(\angle CDE)$ = ..... °

3) The length of BF = ..... cm

4) The two figure ..... and ..... are congruent.

# ANSWER MODEL
# ALGEBRA

## Q1: Choose the correct answer:

| | | | | |
|---|---|---|---|---|
| 1) c | 6) a | 11) b | 16) b | 21) d |
| 2) a | 7) c | 12) b | 17) a | |
| 3) d | 8) c | 13) d | 18) b | |
| 4) a | 9) a | 14) a | 19) c | |
| 5) d | 10) a | 15) c | 20) d | |

## Q2: Complete the following:

1) -1
2) 0
3) -3
4) 40
5) 3
6) $-\frac{4}{3}$
7) 3
8) $-\frac{4}{7}$
9) 0
10) $\frac{5}{6}$

## Q3: Answer the following:

1) The numbers are $\frac{21}{150}$ , $\frac{22}{150}$ and $\frac{23}{150}$ ( There are many solutions )

2) x = 2 , The numbers are $\frac{13}{24}$ , $\frac{14}{24}$ and $\frac{15}{24}$ ( There are many solutions )

3) $\frac{11}{35}$

4) $\frac{31}{35}$

5) since $\frac{10}{22} = \frac{5}{11}$, then $(\frac{6}{35} + \frac{19}{35}) + (\frac{5}{11} - \frac{5}{11}) = \frac{25}{35} - 0 = \frac{25}{35} = \frac{5}{7}$

6) a. $\frac{1}{2}$ b. $-\frac{2}{3}$ c. $\frac{7}{6}$

7) 8

# ANSWER MODEL
# GEOMETRY

## Q1: Choose the correct answer:

1) b
2) b
3) c
4) c
5) c
6) a
7) b
8) a
9) d
10) a
11) b
12) b
13) b
14) c
15) a
16) b
17) c
18) a

## Q2: Complete the following:

1) perpendicular
2) in same straight line
3) Y
4) 360
5) 54
6) x = 35
7) 70
8) equal in measure
9) equal in length
10) supplementary
11) YD
12) straight line
13) 14
14) equal in measure, equal in length
15) congruent

## Q3: Answer the following:

1) 120°
2) 149°
3) 1) 90°
   2) 80°
   3) 6 cm
   4) polygon FAED congruent polygon FBCD

# Revision

**1** Complete :-

| | |
|---|---|
| 1 | If $\frac{3}{x+4}$ is a rational number , then $x \neq$ ..... |
| 2 | The number that lies at half way between $\frac{1}{2}$ and $\frac{1}{3}$ is ..... |
| 3 | The greatest non positive rational number is ..... |
| 4 | $a \times \frac{b}{5} = \frac{a}{5}$, then $a$ = ..... |
| 5 | If $\frac{3}{4} \times y = 1$, then $y$ = ..... |
| 6 | If $x = 3$ , $y = 4$ and $z = 6$, then $\frac{x}{y} - \frac{z}{x}$ = ..... |
| 7 | The number that hasn't a multiplicative inverse is ..... |
| 8 | The additive inverse of the number $\frac{3}{7}$ is ..... |
| 9 | The additive inverse of the number $\left(-\frac{1}{5}\right)$ is ..... |
| 10 | The additive inverse of the number $(-\frac{3}{4})^0$ is ..... |
| 11 | The multiplicative inverse of the number $\lvert -\frac{1}{9} \rvert$ is ..... |
| 12 | The multiplicative inverse of the rational number $(\frac{-2}{5})$ is ..... |
| 13 | The multiplicative inverse of the number $3\frac{1}{3}$ is ..... |
| 14 | The multiplicative inverse of the number $(\frac{1}{2})^0$ is ..... |
| 15 | The additive inverse of the number 1 is ....., the multiplicative inverse of the number 1 is ..... |
| 16 | The additive identity element in Q is ..... , the multiplicative identity in Q is ..... |
| 17 | If $x + \frac{3}{x} = 4 + \frac{3}{4}$, then $x$ = ..... |

| | |
|---|---|
| 18 | The reminder of subtracting $\frac{3}{7}$ from $\frac{9}{21}$ is ..... |
| 19 | $1\frac{1}{3}+\frac{3}{5}=$ ..... |
| 20 | $-\frac{4}{11}\times$ ..... $=1$ |
| 21 | $3\frac{1}{4}\times$ ..... $=1$ |
| 22 | If $\frac{y}{x}=1$, then $3x-3y=$ ..... |
| 23 | $0.\dot{3}$ in the form of $\frac{a}{b}=$ ..... |
| 24 | If $\frac{a}{b}=\frac{1}{2}$, then $\frac{2a}{b}=$ ..... |
| 25 | $\frac{2}{5}=$ ..... % 0.57 = ..... % 3.5 = ..... % |
| 26 | The number 1.25 in the form of $\frac{a}{b}$ is ..... |
| 27 | If $\frac{a}{b}=0$, then $3ab=$ ..... ( such that $b\neq 0$ ) |
| 28 | The additive inverse of $(\frac{-2}{3})^2$ is ..... |
| 29 | If $\frac{a}{b}=60$, then $\frac{a}{3b}=$ ..... |
| 30 | 1 , 1 , 2 , 3 , 5 , 8 , ..... , ..... ( in the same pattern ) |
| 31 | The additive inverse of $\frac{-9}{-7}$ is ..... |

32 If : $\frac{x-3}{x-7}\in\mathbb{Q}$ , then : $x\neq$ .....

33 $\frac{x}{24} = \frac{5}{12}$ , then $x =$ .....

34 $1.\dot{2}\dot{5}$ as a rational number = .....

35 $0.5\dot{7} =$ .....

36 $\frac{1}{4}$ = ..... %  $\frac{21}{1000}$ = ..... %  $|-0.4|$ = ..... %

The result of subtracting $2x$ from $-3x$ is .....

The increase of $-2x$ than $-5x$ is .....

The decrease of $-3ab$ than $2ab$ is .....

## ❷ choose the correct answer

| | | |
|---|---|---|
| 1 | $0.\dot{7}$ = ..... | ( $\frac{7}{10}$ , $\frac{7}{9}$ , $\frac{7}{100}$ , $\frac{7}{99}$ ) |
| 2 | The multiplicative inverse of the number $\frac{1}{2}$ is ..... | ( 1 , $-2$ , 2 , 5 ) |
| 3 | The multiplicative inverse of the number ..... Is itself | ( $-1$ , 0 , 2 , 3 ) |
| 4 | $\left\|-\frac{3}{5}\right\|$ ..... zero | ( < , = , > ) |
| 5 | The rational number which lies between $\frac{1}{3}$ and $\frac{2}{5}$ is ..... | ( $\frac{5}{15}$ , $\frac{7}{15}$ , $\frac{11}{30}$ , $\frac{13}{30}$ ) |
| 6 | $\frac{9}{x-2} \in Q$ if $x \neq$ ..... | (9 , 2 , 0 , $-2$ ) |
| 7 | The number $0.\dot{5}\,\dot{7}$ as a rational number .... | ( $\frac{5}{9}$ , $\frac{19}{33}$ , $\frac{3}{7}$ , $\frac{2}{3}$ ) |
| 8 | If $\frac{x}{y} = 1$ , then $2x - 2y$ = ..... | ( 4 , 2 , 0 , 1 ) |
| 9 | The additive inverse of $(-2)^3$ is ..... | ( 8 , $-8$ , 4 , 6 ) |
| 10 | $\frac{-3}{5} + \frac{2}{3}$ = ..... | ( $\frac{6}{5}$ , $\frac{1}{15}$ , 5 , 3 ) |
| 11 | If $\frac{a}{b} = \frac{1}{2}$ , then $2a - b$ = ..... | ( 1 , 0 , 3 , $-1$ ) |
| 12 | Half of $2^{100}$ = ..... | ( $2^{98}$ , $2^{99}$ , $4^{100}$ , $2^{50}$ ) |
| 13 | Which of the following lies between $\frac{7}{11}$ , $\frac{7}{20}$ ? | ( $\frac{7}{10}$ , $\left\|-\frac{7}{11}\right\|$ , $\frac{7}{15}$ , $\frac{7}{22}$ ) |
| 14 | The rational $\frac{x}{-3}$ is negative if $x$ ..... | ( $< 0$ , $> 0$ , $\leq 0$ , $\geq 0$ ) |
| 15 | The number $\frac{7}{x-9}$ not a rational number if ..... | ( $x = 9$ , $x = 7$ , $x \neq 9$ , $x = -9$ ) |
| 16 | The smallest fraction of the following ..... | ( $\frac{1}{2}$ , $\frac{3}{4}$ , $\frac{5}{8}$ , $\frac{7}{16}$ ) |
| 17 | If : $\frac{x+7}{x-5} = 0$ if $x$ = ..... | ( 7 , $-7$ , 5 , $-5$ ) |
| 18 | The necessary condition to make $\frac{7}{2x-10}$ a rational number if $x \neq$ ..... | ( $-7$ , 5 , $-5$ , 10 ) |

| | | |
|---|---|---|
| 19 | The additive inverse of the number $\frac{1}{3}$ is ..... | ( $\frac{3}{10}$ , 0.3 , 3 , $-0.\dot{3}$ ) |
| 20 | If : $\frac{x}{y} = \frac{2}{3}$ , then $\frac{3}{2}\frac{x}{y}$ = ..... | |
| 21 | If $3a = 27$ and $ab = 1$ , then $b$ = ..... | ( $\frac{1}{9}$ , $\frac{1}{5}$ , 5 , 9 ) |
| 22 | $0.7 + 0.\dot{3}$ = ..... | ( 1 , 3.7 , $0.\dot{3}7$ , $1\frac{1}{30}$ ) |
| 23 | The number of all rational numbers that exist between $\frac{2}{5}$ and $\frac{4}{5}$ is ..... | ( 1 , 2 , 3 , infinite number ) |
| 24 | $7x$ exceeds $-5x$ by ..... | ( $12x$ , $2x$ , $-2x$ , $-2x^2$ ) |
| 25 | $\frac{3x}{5} - \frac{x}{5}$ = ..... | ( $\frac{2}{5}$ , $\frac{x}{5}$ , $\frac{2x}{5}$ , $2x$ ) |
| 26 | $\frac{y^5}{y^3} + y^2$ = ..... , where $y \neq 0$ | ( $y^6$ , $y^5$ , $2y^2$ , $2y^3$ ) |

27 Which of the following is the least rational number .....

(a) $\frac{2}{5}$ (b) $\frac{-7}{5}$ (c) $\frac{24}{23}$ (d) $\frac{-200}{201}$

28 The number of integers lying between $\frac{7}{4}$ , $\frac{11}{8}$ is .....

(a) zero (b) 1 (c) 2 (d) infinite number

29 The rational number which lies between $-\frac{1}{3}$ , $\frac{1}{4}$ is .....

(a) 1 (b) $-1$ (c) 0 (d) $\frac{1}{2}$

30 If : $a \times \frac{b}{3} = 2a$ and $b\,c = 1$ , then $c$ = .....

(a) 3 (b) 6 (c) $\frac{1}{6}$ (d) $\frac{1}{3}$

If : $a \times \frac{b}{7} = \frac{a}{7}$ , then $b$ = .....

The remainder of subtracting $\frac{3}{7}$ from $\frac{9}{21}$ equals .....

Find three rational numbers between : $\frac{1}{2}$ , $\frac{1}{3}$

.....

Find 3 rational numbers lies between $\frac{2}{3}$ and $\frac{3}{7}$

.....

.....

Mr : Ahmed

Hassan

01147310927

Use the properties of addition of rational numbers to find $\frac{5}{4}+\left(\frac{-13}{5}\right)+\left(\frac{-25}{4}\right)+\frac{28}{5}$

.....

.....

If $x=\frac{1}{2}$ , $y=\frac{-2}{3}$ , $z=2$ , then find the value of $\frac{y-z}{x}$

.....

.....

If $a=\frac{7}{4}$ , $b=-\frac{1}{2}$ , find the value of the expression $(a-b)\div(a+b)$

.....

.....

Use the properties of the rational numbers , find the value of

$\frac{7}{12}\times\frac{23}{45}+\frac{17}{12}\times\frac{23}{45}-2\times\frac{23}{45}$

.....

using the distributive property to find : $\frac{-3}{7}\times 8+5\times\frac{-3}{7}+\frac{-3}{7}$

.....

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## ❶ complete:-

| | |
|---|---|
| 1 | The type of the angle of measure 89° 60' is ..... |
| 2 | The type of the angle of measure 179° 60' is ..... |
| 3 | The type of the angle of measure 179° 59 ' 60" is ..... |
| 4 | The two complementary angles are the two angles whose sum of measures is ..... |
| 5 | The two supplementary angles are the two angles whose sum of measures is ..... |
| 6 | The acute angle complements ..... angle and supplements ..... angle |
| 7 | The right angle complements .....angle and supplements ..... angle |
| 8 | The zero angle complements .....angle and supplements ..... angle |
| 9 | The angle whose measure is 63° complements an angle with measure ..... and supplements an angle with measure ..... |
| 10 | If m (∠ A ) = 125 ° , then m ( reflex ∠ A ) = ..... |
| 11 | If the two outer sides of two adjacent angles are on the same straight line , then these two adjacent angles are ..... |
| 12 | If : ∠ A complement ∠ B and ∠ C complement ∠ B , ∠ A and ∠ C are ..... |
| 13 | ∠A supplements ∠B and ∠ B supplements ∠C , then ..... |
| 14 | If ∠A and ∠ B are two complementary angles and m (∠ A ) = m (∠ B ) then m (∠ A ) = ..... |
| 15 | If ∠X and ∠ Y are two supplementary angles and m (∠ X ) = m (∠ Y ) then m (∠ Y ) = ..... |
| 16 | The two adjacent angles formed by intersecting of a straight line and a ray with a start point on this straight line are ..... |
| 17 | If the two adjacent angles are supplementary , then their outer sides ..... |
| 18 | If the two adjacent angles are complementary , then their outer sides ..... |

| | |
|---|---|
| 19 | The sum of measures of the accumulative angles at a point = ..... ° |
| 20 | If two straight lines intersect , then each two vertically opposite angles are ..... |
| 21 | The two line segment are congruent if ..... |
| 22 | Two angles are congruent if ..... |
| 23 | If $\overrightarrow{BD}$ bisects $\angle ABC$ and m ($\angle ABD$) = 35° , then m ($\angle ABC$) = ..... |
| 24 | The measure of each two equal supplementary angles = ..... |
| 25 | If $\angle B$ complements $\angle A$ , m ($\angle A$) = 80° , then m ( reflex $\angle B$ ) = ..... |
| 26 | If the ratio between two supplementary angles is 7 : 11 , then the measure of the greater angle is ..... |
| 27 | If m ($\angle A$) = 2 m ($\angle B$) and $\angle A$ supplement $\angle B$ , then m ($\angle A$) |
| 28 | If $\Delta ABC \equiv \Delta XYZ$ , m ($\angle A$) + m ($\angle B$) = 115° , then m ($\angle Z$) = ..... |
| 29 | If $\overline{AD} \equiv \overline{BC}$ , then AD – BC = ..... |
| 30 | If $\Delta ABC \equiv \Delta XYZ$ , m ($\angle B$) = 80° , m ($\angle Z$) = 40° , then m ($\angle A$) = ..... |
| 31 | If the polygon ABCDE ≡ the polygon LMNPQ , then m ($\angle PNM$) = m ($\angle$ .....) |
| 32 | If $\Delta ABC \equiv \Delta XYZ$ , then AC = ..... |
| 33 | If $\angle B$ complement $\angle A$ and $\angle B \equiv \angle A$ , then m ($\angle B$) = ..... |
| 34 | If $\angle Y$ supplement $\angle X$ and $\angle X \equiv \angle Y$ , then m ($\angle X$) = ..... |

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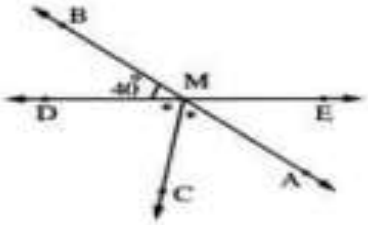
The value of $x$ = .....


$\overleftrightarrow{AB} \cap \overleftrightarrow{DE} = \{M\}$ , m (∠ AMC) = m (∠ CMD)
, m (∠ BMD) = 40°
**Find :** m (∠ EMA) , m (∠ DMC)

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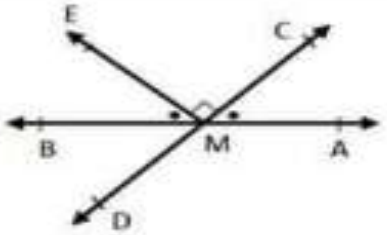
.....

$\overleftrightarrow{AB} \cap \overleftrightarrow{CD} = \{M\}$ , m (∠ CME) = 90°,
m (∠ AMC) = m (∠ EMB)
Find: m (∠ AMC) , m (∠ BMD) , m (∠ AMD)

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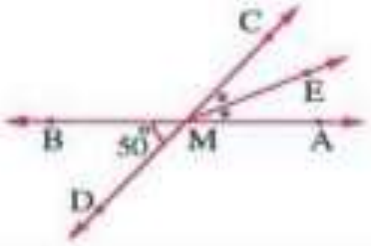
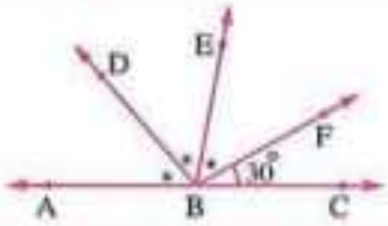
$\overleftrightarrow{AB} \cap \overleftrightarrow{CD} = \{M\}$ , $\overrightarrow{ME}$ bisects ∠ AMC
and m (∠ DMB) = 50°
, then m (∠ AME) = .....



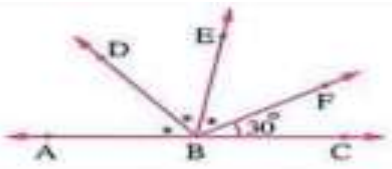

B ∈ $\overleftrightarrow{AC}$ , m (∠ FBC) = 30°
and m (∠ ABD) = m (∠ DBE) = m (∠ EBF)
**Find :** m (∠ ABE)



$B \in \overleftrightarrow{AC}$ , $m(\angle FBC) = 30°$

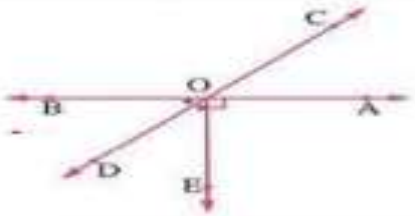
and $m(\angle ABD) = m(\angle DBE) = m(\angle EBF)$

**Find :** $m(\angle ABE)$



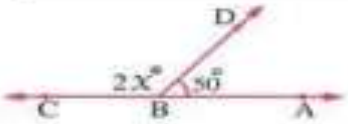

$\overrightarrow{OD}$ bisects $\angle BOE$ , $\overleftrightarrow{AB} \cap \overleftrightarrow{CD} = \{O\}$

, $m(\angle AOE) = 90°$ **Find :** $m(\angle AOC)$




$\overleftrightarrow{AC} \cap \overleftrightarrow{BD} = \{B\}$ , $m(\angle ABD) = 50°$

, $m(\angle DBC) = 2X°$ Find in degrees the value of $X$

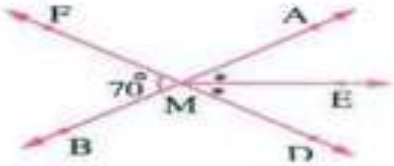



$\overleftrightarrow{AB} \cap \overleftrightarrow{DF} = \{M\}$ , $\overrightarrow{ME}$ bisects $\angle AMD$

, $m(\angle FMB) = 70°$

**Find :** (1) $m(\angle AMF)$ (2) $m(\angle AMD)$

(3) $m(\angle DME)$



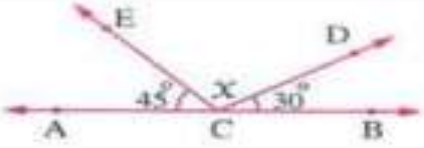

.....

.....

.....

.....

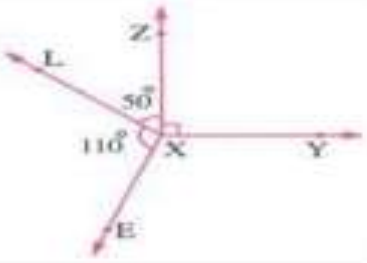
The value of $X =$ .....°



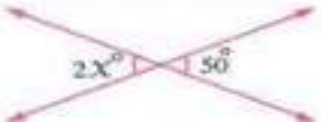

$m(\angle YXZ) = 90°$ , $m(\angle ZXL) = 50°$

and $m(\angle LXE) = 110°$

**Find with giving the reason :** $m(\angle YXE)$




**The value of $x$ = .....**



## ❷ choose the correct answer

| | |
|---|---|
| 1 | The measure of each of two equal complementary angles equals .....<br>( 180° , 45° , 360° , 90° ) |
| 2 | If two straight lines intersect , then each two ..... angles have the same measure<br>( vertically opposite , adjacent , alternate , corresponding ) |
| 3 | If Δ ABC ≡ Δ LMN , then m (∠ ACB ) = m (∠ .....) ( LMN , MLN , LNM , NLM ) |
| 4 | If ∠X complements ∠Y and ∠X ≡ ∠Y , then m (∠ X ) = .....°<br>( 45 , 90 , 180 , 360 ) |
| 5 | If Δ ABC ≡ Δ XYZ , m (∠ A ) + m (∠ B ) = 100° , then m (∠ Z ) = .....°<br>( 50 , 80 , 90 , 100 ) |
| 6 | The sum of measures of the accumulative angles at a point = .....<br>( 630° , 180° , 90° , 360° ) |
| 7 | If Δ ABC ≡ Δ XYZ , m (∠ A ) = 50° , m (∠ Y ) = 60° , then m (∠ C ) = .....<br>( 50° , 60° , 70° , 80° ) |
| 8 | The measure of the supplement of the angle whose measure 30° = .....<br>( 60° , 180° , 90° , 150° ) |
| 9 | The whose measure is more than 90° and less than 180° is ..... angle<br>( an obtuse , an acute , a right , a straight ) |
| 10 | The angle whose measure is 78° 60' is ..... angle<br>( an obtuse , an acute , a right , a straight ) |
| 11 | The type of the angle of measure 179° 61' is .....<br>( an obtuse , an acute , a reflex , a straight ) |
| 12 | The type of the angle of measure 89° 60' is .....<br>( an obtuse , an acute , a right , a straight ) |
| 13 | The measure of the supplement of the angle of measure 35° equals .....<br>( 165° , 180° , 65° , 145° ) |

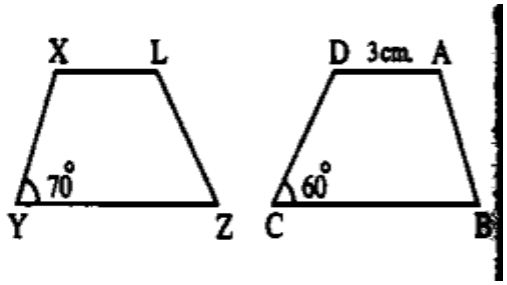
| | |
|---|---|
| 14 | If $\overline{AB} \equiv \overline{CD}$ and AB = 4 cm. , then AB + 2 CD = ..... Cm. ( 10 , 4 , 8 , 12 ) |
| 15 | If m ($\angle$ A ) = 110° , then m ( reflex $\angle$ A ) = ..... ( 70° , 360° , 250° , 150° ) |
| 16 | The acute angle supplements ..... angle ( an obtuse , an acute , a reflex ) |
| 17 | $\overrightarrow{AB} \cup \overrightarrow{AC}$ = ..... ( $\overrightarrow{AB}$ , $\angle$ABC , $\angle$BAC , $\emptyset$ ) |
| 18 | $\overline{XY}$ ..... $\overleftrightarrow{XY}$ ($\in$ or $\subset$ or $\notin$ or $\not\subset$) |
| 19 | The sum of measures of the accumulative angles at a point equals the sum of measures of ..... angles ( 2 right , 3 right , 4 right , 5 right ) |
| 20 | The sum of measures of 6 accumulative angles at a point ..... The sum of measures of 3 accumulative angles at a point ( < , > , = ) |
| 21 | Two complementary angles are two angles whose sum of their measures is ..... ( 90° , 180° , 100° , 45° ) |
| 22 | If m ($\angle$ X ) + m ($\angle$ Y ) = 180° , then $\angle$ X and Y are ..... ( equal in measure , complementary , supplementary , adjacent ) |
| 23 | If two triangles ABC and XYZ are congruent , then ..... ( BC = XZ , YX = CA , ZY = CB , AB = YZ ) |
| 24 | If m ($\angle$ X ) = 2 m ($\angle$ Y ) , $\angle$X and $\angle$Y are two supplementary angles , then m ($\angle$ Y ) = ..... ( 90° , 120° , 30° , 60° ) |
| 25 | The right angle complements angle whose measure is ..... ( 0° , 45° , 90° , 180° ) |
| 26 | Two adjacent angles formed by a straight line and a ray with a starting point on this straight line are ..... ( equal in measure , complementary , supplementary , adjacent ) |
| 27 | $\angle$ XYZ = YZ ..... YX ( = , $\equiv$ , $\cup$ , $\cap$ ) |
| 28 | The two bisector of two adjacent supplementary angles ..... ( parallel , perpendicular , coincident ) |

**In the opposite figure :**

The polygon ABCD ≡ the polygon XYZL

**Find :** ① The length of $\overline{LX}$ ② m (∠ B)

③ m (∠ Z)

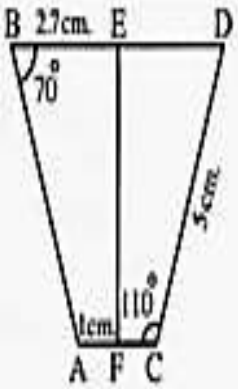



)In the opposite figure :

The polygon AFEB ≡ The polygon CFED ,

then m (∠ D) = .....° , m (∠ A) = .....°

The perimeter of the figure ABDC = ..... cm.



# Revision for Prep 1

***Complete the following :***

(1) If : $\frac{x-5}{x-7} = 0$, then : $x =$ .....

(2) The multiplicative inverse of the number : $\frac{-9}{8}$ is .....

(3) $3 \times$ ..... $= 1$

(4) The rational number which hasn't a multiplicative inverse is .....

(5) $\left(\frac{2}{7} + \frac{3}{5}\right)$ is the multiplicative inverse of the rational number .....

(6) The additive inverse of the number : $\frac{7}{25} \times (-5)^2$ is .....

(7) If : $\frac{a}{b} = \frac{2}{3}$, then : $\frac{3a}{2b} =$ .....

(8) The remainder of subtracting $\left(\frac{1}{5}\right)$ from $\left(-\frac{2}{5}\right)$ equals .....

(9) The simplest form of the expression : $\frac{3}{4} \times \left(\frac{1}{2} - \frac{1}{3}\right) =$ .....

(10) $\frac{2}{3} \times \left(2 + \frac{1}{2}\right) = \frac{2}{3} \times 2 + \frac{2}{3} \times$ .....

(11) The rational number halfway between $-\frac{5}{2}$ and $-\frac{3}{2}$ is .....

(1) If : $-3\frac{4}{7} \times x = -3\frac{4}{7}$, then find the value of $x$

(2) If : $x = -\frac{7}{4} \times -\frac{4}{7}$, then find the value of $x$

(3) If : $x = \frac{2}{3}$ , $y = -\frac{1}{6}$ , $z = -3$ , then find : $(x \div y) - (z \div y)$

(4) Find four rational numbers between $\frac{1}{3}$ and $\frac{7}{9}$

(5) **Use the distribution property to find the value of :**

**(1)** $\frac{6}{37} \times 7 + \frac{6}{37} \times 5 + \frac{6}{37} \times (-11)$

**(2)** $\frac{7}{12} \times \frac{23}{45} + \frac{17}{12} \times \frac{23}{45} - 2 \times \frac{23}{45}$

(11) Find the rational number that lies one third of the way from $\frac{4}{7}$ to $1\frac{3}{4}$ from the smallest.

(12) Find the number one fourth of the way from $-\frac{1}{9}$ to $-\frac{7}{8}$

*Answer the following questions :*

**1 Choose the correct answer from those given :**

(1) $\overline{AB}$ ..... $\overleftrightarrow{AB}$

(a) $\in$ (b) $\notin$ (c) $\subset$ (d) $\not\subset$

(2) The angle whose measure = 62° is supplemented by an angle of measure .....

(a) 28° (b) 118° (c) 38° (d) 128°

(3) The angle whose measure = 37° complements an angle of measure .....

(a) 37° (b) 53° (c) 63° (d) 143°

(4) If m (∠ A) = 150° , ∠ B supplements ∠ A , ∠ C complements ∠ B , then m (∠ C) = .....

(a) 30° (b) 60° (c) 90° (d) 180°

(5) If the ratio between the measures of two supplementary angles is 1 : 2 , then the measure of the smaller angle equals .....

(a) 30° (b) 120° (c) 60° (d) 150°

---

**2 Complete the following :**

(1) The angle is .....

(2) The acute angle supplements ..... angle.

(3) If m (∠ ABC) = 60° , then m (reflex ∠ ABC) = .....°

(4) The sum of measures of the two supplementary angles = .....°

(5) The two adjacent angles whose two outer sides are perpendicular are .....

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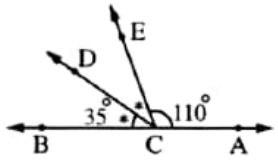
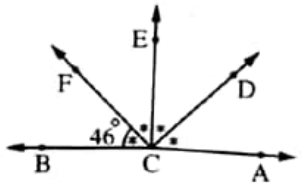
**3 In each of the following figures :** Are $\overrightarrow{CA}$ and $\overrightarrow{CB}$ on the same straight line ? Why ?

(1)




(2)

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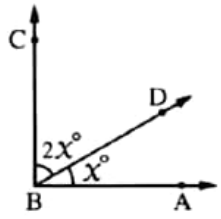
**4 In the opposite figure :**

If $\overrightarrow{BC} \perp \overrightarrow{BA}$ , then find the value of $x$



*Answer the following questions :*

**1 Complete the following :**

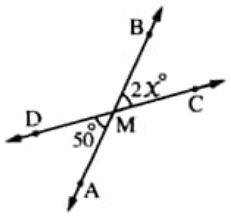
(1) Zero angle is complemented by ..... angle.

(2) If two straight lines intersect , then each two vertically opposite angles are .....

(3) The two adjacent angles formed by a straight line and a ray with a starting point on this straight line are .....

(4) **In the opposite figure :**

$\overleftrightarrow{AB} \cap \overleftrightarrow{CD} = \{M\}$ , then $x$ = .....°




(5) The sum of measures of two complementary angles = .....°

(6) The angle whose measure = 58° is supplemented by an angle whose measure = .....°

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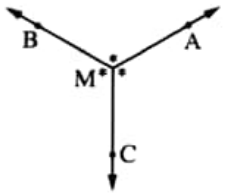
**2 Choose the correct answer from those given :**




(1) **In the opposite figure :**

m (∠ AMC) = .....

(a) 60° (b) 120°

(c) 150° (d) 360°

(2) If ∠ A complements ∠ B and m (∠ A) = 48° , then m (reflex ∠ B) = .....

(a) 309° (b) 312° (c) 315° (d) 318°

(3) If ∠ X and ∠ Y are supplementary and m (∠ X) = $\frac{1}{2}$ m (∠ Y) , then m (∠ Y) = .....

(a) 30° (b) 60° (c) 120° (d) 180°

(4) The sum of measures of the accumulative angles at a point = .....

(a) 2 right angles (b) 3 right angles (c) 4 right angles (d) 5 right angles

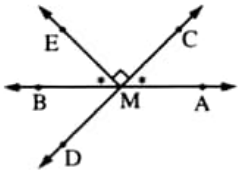
---

**3 In the opposite figure :**

$\overleftrightarrow{AB} \cap \overleftrightarrow{CD} = \{M\}$ , m (∠ CME) = 90° ,

m (∠ AMC) = m (∠ EMB)

**Find :** m (∠ AMC) , m (∠ BMD) , m (∠ AMD)



*Answer the following questions :*

**1 Choose the correct answer from those given :**

(1) If : $\overline{AB} \equiv \overline{CD}$ , then AB = .....

(a) $\overrightarrow{CD}$ (b) $\overline{CD}$ (c) CD (d) AD

(2) If a line segment is extended from one of its terminals without limit , it will be .....

(a) line segment. (b) ray. (c) straight line. (d) angle.

(3) The acute angle supplements ..... angle.

(a) an acute (b) an obtuse (c) a right (d) a reflex

(4) If : m (∠ A) = 90° , then m (reflex ∠ A) = .....

(a) 0° (b) 90° (c) 180° (d) 270°

(5) The measure of the supplementary angle of the angle whose measure = 60° equals .....

(a) 30° (b) 120° (c) 180° (d) 90°

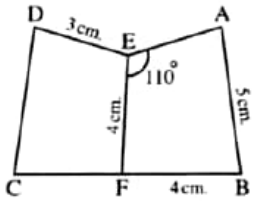
(6) If : $\overline{AB} \equiv \overline{CD}$ , then AB – CD = .....

(a) 2AB (b) 2CD (c) AB (d) zero

---

**2 In the opposite figure :**

If F ∈ $\overline{BC}$ and the figure ABFE ≡ the figure DCFE




**Complete the following :**

(1) The axis of symmetry of the figure is .....

(2) AE = ..... cm. (3) ∠ D ≡ ∠ .....

(4) m (∠ FED) = .....° (5) m (∠ EFB) = .....°

(6) The perimeter of the figure ABCDE = ..... cm.

---

**3 Complete the following :**

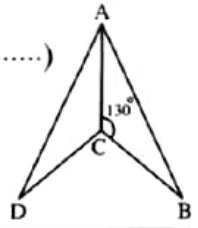
(1) The two angles are congruent if they .....

(2) If the figure ABCD ≡ the figure LMNO , then m (∠ ABC) = m (∠ .....)

(3) If : ∠ A complements ∠ B , ∠ A ≡ ∠ B , then m (∠ A) = .....°

(4) **In the opposite figure :**

If Δ ACB ≡ Δ ACD , m (∠ ACB) = 130° , then m (∠ BCD) = .....°

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**4 In the opposite figure :**

m (∠ AFB) = 120° , m (∠ BFC) = 80° ,

m (∠ AFD) = 90°

**Find :** m (∠ CFD)